

UNITED STATES AIR FORCE AFIOH

Hazardous Waste Accumulation Point Manager Training Companion Guide, Korea (English Text Version)

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May 2006

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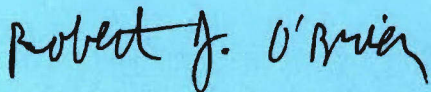
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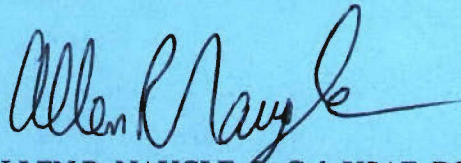
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SECTION 1

INTRODUCTION

This guide is the primary guide for Hazardous Waste Accumulation Point Managers (HWAPMs) assigned to United States Air Force (USAF) installations within Korea. It is a tool to assist HWAPMs in complying with Korea Environmental Governing Standards (KEGS) and Air Force directives. It addresses the hazardous waste management requirements and procedures for those assigned to Kunsan AB, Osan AB, and their supported co-located operating bases (COBs) and ranges. It will minimize safety hazards associated with management of hazardous wastes, improve hazardous waste compliance, and eliminate enforcement actions within your organization. This guide is designed to provide important information in an easy to use format to assist you in your duties.

If you don't find an answer to your hazardous waste question in this manual, contact your Unit Environmental Coordinator (UEC) or the Installation Hazardous Waste Program Manager (IHWPM), or refer to the KEGS. The KEGS contains the criteria for a comprehensive management program to ensure hazardous wastes and designated wastes are properly handled.

The wastes addressed in this guide include Hazardous Waste and Designated Wastes. Detailed information on these wastes is provided in Section 4.

Designated Wastes are also commonly stored at Hazardous Waste Accumulation Points (HWAPs). Designated Waste is defined as a waste that can pose a risk to environment such as oil and waste acid; or waste that can do harm to human health such as infectious wastes. Polychlorinated biphenyls (PCBs) are also designated wastes. More detailed information on designated wastes can be found in Section 4.5.1 of this guide or in your installation hazardous waste management plan.

References

- Korea Environmental Governing Standards
- Air Force Instruction (AFI) 48-119, "Medical Service Environmental Quality Programs"
- AFI 32-7042, "Solid and Hazardous Waste Compliance"
- Air Force Pamphlet 32-7043, "Hazardous Waste Management Guide"

SECTION 2

CONCEPT OF OPERATIONS

2.1 WHO ARE THE CRUCIAL PLAYERS IN HAZARDOUS WASTE MANAGEMENT?

The concept behind effective hazardous waste management is dependent upon three separate, but crucial players: the HWAPM; Civil Engineering Environmental Flight (CEV); and Bioenvironmental Engineering Flight (BEF). The HWAPM provides information regarding what materials are used in their processes and how those materials are used in the processes that generate waste. CEV accomplishes the hazardous waste profile sheet, hazardous waste manifests, and is responsible for overall hazardous waste management. BEF provides information regarding necessary analysis, sample collection, analytical interpretation, assignment of hazardous waste numbers, and assessments of health hazards. A break down in communication between these players will adversely affect proper hazardous waste management.

2.2 HOW DO THESE THREE OFFICES WORK TOGETHER TO MANAGE HAZARDOUS WASTE?

2.2.1 The Hazardous Waste Accumulation Point Manager is responsible for:

HWAPM responsibilities are outlined in detail in Section 6 of this guide.

2.2.2 Environmental Flight (CEV) is responsible for:

- Accomplishing initial and refresher hazardous waste training
- Maintaining a single, current hazardous waste profile sheet for each waste stream generated on the installation
- Accomplishing periodic accumulation point inspections and discrepancy follow-up actions
- Functioning as the single focal point for hazardous waste turn-in to the Defense Reutilization and Marketing Office (DRMO) or other disposal contractors
- Accomplishing quarterly data calls for each shop to verify/certify the hazardous wastes generated
- Ensuring annual or triennial waste stream characterization is accomplished as required
- Providing consultation as necessary
- Maintaining a listing of hazardous waste accumulation point managers (primary and alternate)
- Maintaining a base-wide hazardous waste stream inventory

2.2.3 Bioenvironmental Engineering Flight (BEF) is responsible for:

- Maintaining a current, KEGS-compliant hazardous waste sample analysis plan
- Accomplishing hazardous waste sampling in accordance with the installation hazardous waste sample analysis plan

- Interpreting hazardous waste results and assigning the appropriate hazardous waste numbers based upon the most current host nation regulatory requirements
- Providing a written summary of the analytical results to the requesting shop, environmental management, and Hazardous Waste Storage Area (HWSA) personnel
- Providing assistance in accomplishing the hazardous waste profile sheet
- Conducting accumulation point inspections as part of industrial hygiene shop visits
- Providing consultation as necessary

SECTION 3

RESPONSIBILITIES

The following is a summary of responsibilities for key Air Force personnel/organizations associated with hazardous waste management:

- The Installation Hazardous Waste Program Manager (IHWPM) - Primary POC in CEV (Environmental Flight) for the Base Hazardous Waste Management Program. Provides technical expertise with regard to hazardous waste labeling, storage, disposal, and recordkeeping.

Telephone: **Organization/Office Symbol:**

- Hazardous Waste Storage Area Manager (HWSAM) - POC for turn-in of hazardous waste to the Hazardous Waste Storage Area.

Telephone: **Organization/Office Symbol:**

- The Hazardous Waste Accumulation Point Manager (HWAPM) – The HWAPM is the individual responsible for waste generated in his/her shop. Specific roles and responsibilities of a HWAPM are provided in Section 6.

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- The Bioenvironmental Engineering Flight (BEF) – The BEF is responsible for collecting hazardous waste samples, interpreting analytical results, and characterizing waste.

Telephone: **Organization/Office Symbol:**

- The Defense Reutilization and Marketing Office (DRMO) – The DRMO is responsible for ultimate disposal and transport to the Treatment, Storage, and Disposal Facility (TSDF).

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- Unit Environmental Coordinator (UEC) - The UEC oversees all group-squadron environmental programs.

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- The HAZMART Pharmacy - The HAZMART Pharmacy can provide Material Safety Data Sheets (MSDSs) and other technical information on chemical products.

Telephone: **Organization/Office Symbol:**

SECTION 4

DETERMINING IF YOU HAVE A HAZARDOUS WASTE & HOW TO CHARACTERIZE IT

4.1 WHAT IS A HAZARDOUS WASTE?

Before understanding what *hazardous waste* is, you must first know what *solid waste* is. **The reason for this is because a waste must be a solid waste in order to be a hazardous waste.** A solid waste is defined as a discarded material that may be a solid, semi-solid, liquid, or contained gas. Although the KEGS does not specifically define “discarded material,” it is generally considered to be a material that is no longer needed or is no longer suitable for use (as a product) without some form of additional processing.

A hazardous waste is a solid waste that exhibits any one or more of the four characteristics of a hazardous waste (ignitability, corrosivity, reactivity, or toxicity) and/or is a listed hazardous waste (F, K, P, or U listed) as discussed in Sections 4.2 and 4.3. **[Note – it’s important to realize that a waste can be both a characteristic hazardous waste and a listed hazardous waste]**

4.2 IS MY WASTE A CHARACTERISTIC HAZARDOUS WASTE?

Characteristic hazardous wastes are addressed in Section B-1 of the KEGS. In general, you have a characteristic hazardous waste if your solid waste meets any one or more of the criteria below.

- Ignitable wastes (D001):
 - A liquid waste is ignitable if it has a flash point less than 140° F;
 - A solid is ignitable if it is capable of causing fire through friction, absorption of moisture, or spontaneous chemical changes and, when ignited, burns so vigorously and persistently that it creates a hazard. Solids cannot be tested for their flash point;
 - Ignitable compressed gases such as propane or acetylene; or
 - Oxidizers (i.e., chemicals with a Department of Transportation hazard class of 5.1).
- Corrosive wastes (D002): Aqueous wastes (i.e., waste containing at least 20% water by volume) having a pH less than or equal to 2, or greater than or equal to 12.5 are considered corrosive. Liquid wastes that are capable of corroding steel at a specified rate are also considered corrosive. Your IHWPM can provide further information on corrosivity testing, if needed. Solids cannot be a corrosive characteristic hazardous waste.

- Reactive wastes (D003): Reactive wastes are wastes that:
 - are normally unstable and readily undergo violent change without detonation;
 - react violently with water;
 - form potentially explosive mixtures with water;
 - generate sufficient quantities of toxic gases, vapors, or fumes when mixed with water to present a danger to human health or the environment;
 - may be cyanide or sulfide-bearing which can generate toxic gases, vapors, or fumes when exposed to pH conditions between 2 and 12.5;
 - are readily capable of detonation or explosive reaction if exposed to a strong initiating source or if heated under confinement;
 - are readily capable of detonation or explosive decomposition or reaction at standard temperature and pressure; or
 - are a forbidden explosive.
- Toxicity characteristic wastes (D004 through D043): Toxicity characteristic wastes contain one or more specific chemicals at concentrations equal to or greater than permitted in Tables B-1 and B-2 of the KEGS (see Table 4-1). Contact the IHWPM or BEF for assistance with sampling of your waste to determine if it exhibits the characteristic of toxicity.

TABLE 4-1

**MAXIMUM CONCENTRATION OF CONTAMINANTS
FOR THE TOXICITY CHARACTERISTIC**

Contaminant	Regulatory Limit¹	USEPA HW Number²	Chemical Abstract Service (CAS) Number
Arsenic	5.0 mg/L	D004	7440-38-2
Barium	100 mg/L	D005	7440-39-3
Benzene	0.5 mg/kg	D018	71-43-2
Cadmium	1.0 mg/L	D006	7440-43-9
Carbon Tetrachloride	0.5 mg/kg	D019	56-23-5
Chlordane	0.03 mg/kg	D020	57-74-9
Chlorobenzene	100.0 mg/kg	D021	108-90-7
Chloroform	6.0 mg/kg	D022	67-66-3
Chromium	5.0 mg/L	D007	7440-47-3
o-Cresol	200.0 mg/kg	D023	95-48-7
m-Cresol	200.0 mg/kg	D024	108-39-4
p-Cresol	200.0 mg/kg	D025	106-44-5
Cresol	200.0 mg/kg	D026	N/A
2,4-D	10.0 mg/L	D016	94-75-7
1,4-Dichlorobenzene	7.5 mg/kg	D027	106-46-7
1,2-Dichloroethane	0.5 mg/kg	D028	107-06-2
1,1-Dichloroethylene	0.7 mg/kg	D029	75-35-4
2,4-Dinitrotoluene	0.13 mg/kg	D030	121-14-2
Endrin	0.02 mg/L	D012	72-20-8
Heptachlor (and its epoxide)	0.008 mg/kg	D031	76-44-8
Hexachlorobenzene	0.13 mg/kg	D032	118-74-1
Hexachlorobutadiene	0.5 mg/kg	D033	87-68-3
Hexachloroethane	3.0 mg/kg	D034	67-72-1
Lead	5.0 mg/L	D008	7439-92-1
Lindane	0.4 mg/L	D013	58-89-9
Mercury	0.2 mg/L	D009	7439-97-6
Methoxychlor	10.0 mg/L	D014	72-43-5
Methyl Ethyl Ketone	200.0 mg/kg	D035	78-93-3
Nitrobenzene	2.0 mg/kg	D036	98-95-3
Pentachlorophenol	100.0 mg/kg	D037	87-86-5
Pyridine	5.0 mg/kg	D038	110-86-1
Selenium	1.0 mg/L	D010	7782-49-2
Silver	5.0 mg/L	D011	7440-22-4
Tetrachloroethylene	0.7 mg/kg	D039	127-18-4
Toxaphene	0.5 mg/L	D015	8001-35-2
Trichloroethylene	0.5 mg/kg	D040	79-01-6
2,4,5-TP (Silvex)	1.0 mg/L	D017	93-72-1
2,4,5-Trichlorophenol	400.0 mg/kg	D041	95-95-4
2,4,6-Trichlorophenol	2.0 mg/kg	D042	88-06-2
Vinyl Chloride	0.2 mg/kg	D043	75-01-4

Notes

1. A waste containing a contaminant with a concentration equal to or greater than the regulatory limit is a hazardous waste.
2. U.S. Environmental Protection Agency Hazardous Waste Number

4.3 IS MY WASTE A LISTED HAZARDOUS WASTE?

The EPA has developed specific lists of chemicals and chemical waste sources which they classify as hazardous. These “listed hazardous wastes” are addressed in Section B-2 of the KEGS. The three types of listed hazardous wastes relevant to Air Force operations include “F” listed waste, “U” listed waste, and “P” listed waste. The following subsections summarize each of these three types of listed waste.

4.3.1 “F” listed wastes: Hazardous waste from non-specific sources such as solvents, plating solutions, and chemical manufacturing processes. “F” listed wastes can be found in Table B-3 of the KEGS. The most common “F” listed wastes (and typically the only ones applicable at most AF installations) are F001 through F005 (see Table 4-2). “F” listed hazardous wastes are frequently missed on base hazardous waste inventories. The key points to consider in determining if you have a “F” listed waste are as follows:

- Do I have a spent solvent of concern? In other words, do I have a waste which had been used as a solvent (prior to becoming a waste) and which contained at least one of the compounds listed under F001 through F005? Frequently encountered “F” listed compounds found in solvents include, but are not limited to, methyl ethyl ketone, toluene, xylene, methyl isobutyl ketone, acetone, ethyl ether, methylene chloride, and 1,1,1-trichloroethane.
- Did the solvent product contain (before use) 10% or more of any one, or any combination of, the compounds listed under F001 through F005?
- If the answer to both questions is yes, you probably have an “F” listed solvent. All “F” listed solvents should be segregated from other waste streams as combining “F” listed wastes with other wastes will cause the combined waste to require management as a listed waste.

As mentioned above, if any listed waste is mixed with another waste, the entire mixture will be considered a listed waste. This can increase disposal costs significantly if a very small quantity of a listed waste is added to a very large quantity of non-listed waste. Listed wastes should be collected separately from other wastes. Contact your IHWPM for more information if necessary.

Examples pertaining to “F” listed solvent waste: A spent solvent is a chemical that was used to solubilize or mobilize dirt, grease, or other contaminants. Say you have a container of polyurethane thinner (which typically contains 30% methyl ethyl ketone and 11% toluene) and you add some of this thinner to paint for the purpose of preparing the paint for application. After your painting process is complete you have left over paint that you want to dispose of. Is this waste paint a “F” listed waste (i.e., is it a F005 listed waste)? The answer is “NO” because the methyl ethyl ketone and toluene-containing thinner you added to the paint is considered to be an ingredient in the paint and was not used for its solvent properties (i.e., the thinner was not used to solubilize or mobilize other constituents). On the other hand, say you took thinner from that same container and applied it to rags which were then used to wipe down an aircraft. Are the waste rags a “F” listed waste (i.e., is it a F005 listed waste)? The answer is “YES” because in this case the

thinner was used for its solvent properties (i.e., to solubilize dirt and other contaminants from the aircraft surface) and it contains 10% or more of those solvents of concern (in this case methyl ethyl ketone and toluene) for the F005 listing.

4.3.2 “U” listed wastes: “U” listed wastes include discarded commercial chemical products, residues from commercial chemical product containers, and residues from spills of commercial chemical products, in which the generic name of the product matches that of any chemical listed in Table B-4 of the KEGS with an USEPA Waste Number beginning with the letter “U” (see Table 4-3 for common “U” listed wastes). Section 4.3.4 provides some important information on “U” and “P” listed wastes, such as the definition of “commercial chemical product.”

4.3.3 “P” listed wastes: “P” listed wastes are referred to as “acute hazardous wastes” and include discarded commercial chemical products, residues from commercial chemical product containers, and residues from spills of commercial chemical products, in which the generic name of the product matches that of any chemical listed in Table B-4 of the KEGS with an USEPA Waste Number beginning with the letter “P” (see Table 4-3 for common “P” listed wastes). Section 4.3.4 below provides some important information on “U” and “P” listed wastes, such as the definition of “commercial chemical product.”

4.3.4 Important Issues Regarding “U” and “P” Listed Wastes: For “U” and “P” listed wastes, the term “commercial chemical product” refers to the commercially pure grade of the chemical, any technical grades of the chemical that are produced or marketed, and all formulations in which the chemical is the sole active ingredient. In simple terms, this means that you must have an unused product that contains only one “active ingredient” (i.e., only one ingredient that performs the primary function of the product) with that ingredient being a chemical listed in Table B-4 of the KEGS and having a USEPA Hazardous Waste Number beginning with “U” or “P.” See Table 4-3 for a listing of common “U” and “P” listed wastes. Frequently encountered “U” listed wastes include, but are not limited to, acetone, hydrazine, methanol, toluene, methyl isobutyl ketone, methyl ethyl ketone, xylene, and formaldehyde. Frequently encountered “U” listed wastes include, but are not limited to, sodium cyanide, warfarin (coumadin), epinephrine, and nitroglycerine (note – expired or surplus pharmaceuticals such as warfarin, epinephrine, and nitroglycerine are commonly sent back to the manufacturer. In this case, the drugs are still considered a product and not a waste).

The most important thing to remember is if you have an unused chemical product you want to dispose of and this product has a sole active ingredient, then you should check the “U” and “P” chemicals listed in Table B-4 of the KEGs to determine if the sole active ingredient is on the list, thereby making the chemical product a listed hazardous waste. Please note that most chemicals have multiple names (synonyms) and that the Chemical Abstract Number (CAS) should be used to confirm whether or not a particular chemical is on the list.

The F, U, and P designations are part of the waste identification number for each of the types of listed hazardous wastes. For example, discarded commercial toluene would have a hazardous waste number of U220. CEV will be the responsible organization for assigning these numbers.

TABLE 4-2
COMMON “F” LISTED WASTES¹

USEPA HW No.²	Hazardous Waste	CAS No.³	RQ (Pounds)⁴
F001	Spent solvents or mixtures used in degreasing containing, before use, a total of 10 percent or more (by volume) of one or more of the following solvents or those solvents listed in F002, F004, and F005 below (a) Tetrachloroethylene (b) Trichloroethylene (c) Methylene chloride (d) 1,1,1-Trichloroethane (e) Carbon tetrachloride (f) Chlorinated fluorocarbons	127-18-4 79-01-6 75-09-2 71-55-6 56-23-5 NA	10
F002	Spent solvent mixtures containing, before use, a total of 10 percent or more (by volume) of one or more of the following solvents or those listed in F001, F004, or F005. (a) Tetrachloroethylene (b) Methylene chloride (c) Trichloroethylene (d) 1,1,1-Trichloroethane (e) Chlorobenzene (f) 1,1,2-Trichloro-1,2,2 trifluoroethane (g) o-Dichlorobenzene (h) Trichlorofluoromethane (i) 1,1,2-Trichloroethane	127-18-4 75-09-2 79-01-6 71-55-6 108-90-7 76-13-1 95-50-1 75-69-4 79-00-5	10
F003⁵	The following spent non-halogenated solvents: (a) Xylene (b) Acetone (c) Ethyl acetate (d) Ethylbenzene (e) Ethyl ether (f) Methyl isobutyl ketone (g) n-Butyl alcohol (h) Cyclohexanone (i) Methanol	1330-20-7 67-64-1 141-78-6 100-41-4 60-29-7 108-10-1 71-36-3 108-94-1 67-56-1	100
F004	The following spent solvents: (a) Cresols/Cresylic acid (b) Nitrobenzene	1319-77-3 98-95-3	100
F005	The following spent solvents: (a) Toluene (b) Methyl ethyl ketone (c) Carbon disulfide (d) Isobutanol (e) Pyridine (f) Benzene (g) 2-Ethoxyethanol (h) 2-Nitropropane	108-88-3 78-93-3 75-15-0 78-83-1 110-86-1 71-43-2 110-80-5 79-46-9	100

Notes

1. The above table was obtained from the Korean Environmental Governing Standards, Appendix B
2. Chemical Abstract Service (CAS) Registry Number
3. Reportable quantity release that requires notification (see Chapter 18 of the KEGS).
4. U.S. Environmental Protection Agency Hazardous Waste Number
5. Table B-3 of the KEGS indicates F003 wastes are listed only because they are ignitable (i.e., “I” is the only Hazard Code associated with F003 wastes). Therefore, a waste meeting the F003 listed waste criteria would not be a F003 listed waste if it can be shown that the waste is not ignitable (i.e., does not have the ignitability characteristic).

TABLE 4-3
COMMON “U” AND “P” LISTED WASTES¹

Chemical Product Name	CAS No.²	Threshold Planning Quantity (Pounds)³	USEPA HW No.⁴	RQ (Pounds)⁵
Acetone	67-64-1		U002	5,000
Benzene	71-43-2		U109	10
Beryllium	7440-41-7		P015	10
Bromomethane (see Methyl bromide)				
1-Butanol	71-36-3		U031	5,000
2-Butanone (see Methyl ethyl ketone)				
n-Butyl alcohol (see 1-Butanol)				
Carbon disulfide	75-15-0	10,000	P022	100
Carbon tetrachloride	56-23-5		U211	10
Chlordane	57-74-9	1,000	U036	1
Chlorobenzene	108-90-7		U037	100
Chloroform	67-66-3	10,000	U044	10
Copper cyanide	544-92-3		P029	10
Cresol(s) (Phenol, Methyl)	1319-77-3		U052	100
Cyanides (soluble salts and complexes) not otherwise specified	57-12-5		P030	10
2,4-D, salts & esters (2,4-Dichlorophenoxyacetic Acid)	94-75-7		U240	100
m-Dichlorobenzene (1,3)	541-73-1		U071	100
o-Dichlorobenzene (1,2)	95-50-1		U070	100
p-Dichlorobenzene (1,4)	106-46-7		U072	100
Dichlorodifluoromethane	75-71-8		U075	5,000
1,1-Dichloroethane	75-34-3		U076	1,000
1,2-Dichloroethane	107-06-2		U077	100
1,1-Dichloroethylene	75-35-4		U078	100
1,2-Dichloroethylene	156-60-5		U079	1,000
Dichloromethane (see Methylene chloride)				
2,4-Dinitrotoluene	121-14-2		U105	10
Endrin	72-20-8	500/10,000	P051	1
Endrin & metabolites	72-20-8		P051	1
Epinephrine	51-43-4		P042	1,000
2-Ethoxyethanol (see Ethylene glycol monoethyl ether)				
Ethylene glycol monoethyl ether	110-80-5		U359	1,000
Ethylene oxide	75-21-8	1,000	U115	10
Ethyl ether	60-29-7		U117	100
Formaldehyde	50-00-0	500	U122	100
Formic acid	64-18-6		U123	5,000
Heptachlor	76-44-8		P059	1
Hexone (see Methyl isobutyl ketone)				
Hydrazine	302-01-2	1,000	U133	1
Hydrazine, 1,2-diethyl-	1615-80-1		U086	10
Hydrazine, 1,1-dimethyl-	57-14-7		U098	10
Hydrazine, 1,2-dimethyl-	540-73-8		U099	1
Hydrazine, 1,2-diphenyl-	122-66-7		U109	10
Hydrazine, methyl-	60-34-4		P068	10

TABLE 4-3 (Cont'd)

COMMON "U" AND "P" LISTED WASTES¹

Chemical Product Name	CAS No. ²	Threshold Planning Quantity (Pounds) ³	USEPA HW No. ⁴	RQ (Pounds) ⁵
Hydrofluoric acid (see Hydrogen fluoride)				
Hydrogen cyanide	74-90-8		P063	10
Hydrogen fluoride	7664-39-3	100	U134	100
Hydrogen sulfide	7783-06-4	500	U135	100
Isobutanol (see Isobutyl alcohol)				
Isobutyl alcohol	78-83-1		U140	5,000
Lead acetate	301-04-2		U144	10
Lindane	58-89-9	1,000/10,000	U129	1
MEK (see Methyl ethyl ketone)				
Mercury	7439-97-6		U151	1
Methanol	67-56-1		U154	5,000
Methyl alcohol (see Methanol)				
Methyl bromide	74-83-9	1,000	U029	1,000
Methyl chloroform (see 1,1,1-Trichloroethane)				
Methylene chloride	75-09-2		U080	1,000
Methyl ethyl ketone (MEK)	78-93-3		U159	5,000
Methyl ethyl ketone peroxide	1338-23-4		U160	10
Methyl isobutyl ketone	108-10-1		U161	5,000
Methyl parathion	298-00-0		P071	100
Naphthalene	91-20-3		U165	100
Nitric oxide	10102-43-9	100	P076	10
Nitrogen dioxide	10102-44-0	100	P078	10
Nitrogen oxide (see Nitric oxide)				
Nitroglycerine	55-63-0		P081	10
Parathion	56-38-2	100	P089	10
Pentachlorophenol	87-86-5		U242	10
Phenol	108-95-2	500/10,000	U188	1,000
Physostigmine	57-47-6	100/10,000	P204	1
Potassium cyanide	151-50-8	100	P098	10
Silvex (2,4,5-TP)	93-72-1		U233	100
Sodium cyanide	143-33-9	100	P106	10
2,4,5-T	93-76-5		U232	1,000
1,1,1,2-Tetrachloroethane	630-20-6		U208	100
1,1,2,2-Tetrachloroethane	79-34-5		U209	100
Tetrachloroethene	127-18-4		U210	100
Tetrachloroethylene	127-18-4		U210	100
Toluene	108-88-3		U220	1,000
Toxaphene	8001-35-2		P123	1
1,1,1-Trichloroethane	71-55-6		U226	1,000
1,1,2-Trichloroethane	79-00-5		U227	100
Trichloroethene	79-01-6		U228	100
Trichloroethylene	79-01-6		U228	100
Trichloromonofluoromethane	75-69-4		U121	5,000

TABLE 4-3 (Cont'd)

COMMON “U” AND “P” LISTED WASTES¹

Chemical Product Name	CAS No.²	Threshold Planning Quantity (Pounds)³	USEPA HW No.⁴	RQ (Pounds)⁵
Warfarin, & salts, when present at concentrations greater than 0.3%	81-81-2	500/10,000	P001	100
Xylene (mixed)	1330-20-7		U239	100

Notes

1. The above table was obtained from the Korean Environmental Governing Standards, Appendix B. This table has been modified and does not reflect all the “U” and “P” listed wastes, but is limited to those typically encountered at a USAF installation. Contact CEV/BEF for assistance if you have a waste that is an unused product with a single active ingredient and that ingredient is not addressed on the above listing.
2. Quantity in storage above which Environmental Executive Agent must be notified (See Chapter 5 of the KEGS)
3. U.S. Environmental Protection Agency Hazardous Waste Number
4. Reportable quantity release that requires notification (see Chapter 18 of the KEGS).
5. Chemical Abstract Service (CAS) Registry Number

4.4 HOW DO I EVALUATE A SOLID WASTE TO DETERMINE IF IT IS A HAZARDOUS WASTE?

Hazardous waste may be identified by evaluating all the shop processes that generate waste. A waste can range from dirty paper towels to used batteries to drums of paint waste to bowlers full of used oil. To effectively evaluate all your processes, you must consider the types of products used in the process as well as the process itself. The following are common indicators that you might have a hazardous waste that you need to establish a waste stream for:

- If the process involves removing dirt, rust, paints, petroleum products, from equipment
 - The substance(s) being removed may be a hazardous waste due to ingredients and/or contaminants in the substance(s)
 - The material used to remove the substance (rags, swabs, paper towels, solvent, abrasive media, etc.) may be a hazardous waste
- If the process involves using a product obtained from the hazardous materials pharmacy
 - The product may be a hazardous waste once it is used and results in generating a waste (i.e., may be hazardous due to a hazardous waste characteristic, or if it’s a “F” listed waste)
 - Items contaminated with the product (e.g., paint filters, overspray paper, spill absorbents, rags, etc.) may be a hazardous waste (i.e., may be hazardous due to a hazardous waste characteristic, or if it’s a “F” listed waste)

- The product may be a hazardous waste if it is not used (i.e., may be hazardous if the unused product is going to be disposed of and is a “U” or “P” listed waste)

The following is an example of a process evaluation:

Cleaning of miscellaneous engine parts: The process involves the removal of various parts and placing them into a solvent tank using a commercial cleaner. The parts are made of metal and are usually coated with oil, grease, fuel, and/or dirt. The solvent used is petroleum-based and removes the oil, grease, fuel, and/or accumulated dirt from the various engine parts.

Product Evaluation: The material safety data sheet (MSDS) for the solvent should be consulted to determine the product formulation (applicability of the toxicity characteristic and/or F-listing), flash point (applicability of ignitability characteristic), pH (applicability of corrosivity characteristic), and incompatible materials/fire fighting precautions/reactivity data (applicability of reactivity characteristic). Typically, the characteristics of ignitability, toxicity, and “F” listings are the primary concerns. Ignitability is a concern because petroleum-based solvents frequently have low flash points. Toxicity is a concern because of the product formulation or contaminants introduced through its use. “F” listing is a concern because the product is being used for its solvent properties.

Process Evaluation: In the case of used solvent, the oil, grease, fuel, and/or dirt introduced as a result of the cleaning process can affect the composition and properties of the solvent. For example, toxicity is a concern because metal engine parts wear and may introduce sufficient metal contaminants into the used solvent to cause it to be a hazardous waste. Toxicity may also be a concern due to possible organic constituents in the materials introduced into the solvent, such as benzene in fuel. A review of the MSDS for the materials (oil, grease, fuel, etc.) that may be introduced into the cleaning solvent is recommended. During this review the flash points of the various materials can be identified to determine if they will lower or raise the flashpoint of the solvent. Further, the formulations of the materials introduced into the solvent can be compared to the listing of regulated substances provided in Table 4-1 to assess the potential for the waste to exhibit the toxicity characteristic. Since MSDSs have limitations (i.e., don’t list ingredients below certain percentages, don’t address the introduction of metals from parts wear, etc.), chemical analysis is also required to properly characterize the waste. Assistance in this evaluation process can be obtained from the IHWPM and/or BEF. Be prepared to provide a detailed process description and the pertinent MSDSs.

Your IHWPM can assist you in determining if you have a hazardous waste. In summary, there are several criteria that a waste must meet to be considered a “hazardous” waste. They are:

- It must be a Solid Waste (Section 4.1); AND
- It must show certain characteristics of a hazardous waste (Section 4.2); AND/OR
- It must be listed in Section B-2 of the KEGS (Section 4.3).

When determining whether you have a hazardous waste, you must go through all the following steps. Do I have a solid waste? Is my waste a characteristic hazardous waste? Is my waste a listed hazardous waste? Keep in mind that a waste can be both a characteristic hazardous waste and a listed hazardous waste. (Note - there are some exclusions/exemptions that may apply to your waste, especially if the waste is being recycled. If you have any questions, contact your IHWPM.)

4.5 ARE THERE ANY OTHER WASTES THAT I NEED TO BE AWARE OF? Yes, designated waste and used oil fuel burned for energy recovery.

4.5.1 Designated Wastes: The KEGS also regulate 10 other wastes known as designated wastes (see Section B-3 of the KEGS). Designated wastes are defined as wastes that can pose a risk to the environment such as oil and waste acid, or waste that can do harm to human health such as infectious wastes and polychlorinated biphenyls (PCBs). Some of these wastes are determined in a similar manner as the toxicity characteristic (their status is analytical/concentration dependent) while others are knowledge-based determinations. A listing of analytical-based designated wastes is provided in Table 4-4. Your waste is a designated waste if the numerical value in the second column of this table is met or exceeded. A summary of knowledge-based designated wastes is provided in Tables 4-5 and 4-6.

The most common designated wastes you will encounter are: corrosive waste, wastes containing hazardous materials, waste organic solvents, waste paint and lacquer, waste oil, waste asbestos, and PCB-containing wastes. If you have a designated waste notify the IHWPM as all designated wastes require some form of special handling and manifesting.

4.5.2 Used Oil Fuel Burned For Energy Recovery: Used oil means any oil or other waste petroleum, oils, and lubricants (POL) product that has been refined from crude oil or is a synthetic oil, which has been used, and as a result of such use, is contaminated by physical or chemical impurities. Although used oil may exhibit the characteristics of reactivity, toxicity, ignitability, or corrosivity, it is still considered used oil, unless it has been mixed with hazardous waste. Used oil mixed with hazardous waste (such as used antifreeze or spent solvent) is a hazardous waste and will be managed as such (see Sections 4.2 and 4.3). Used oil burned for energy recovery must not exceed 4,000 ppm total halogens.

Oil must be used as lubricants, hydraulic fluids, heat transfer fluids, buoyants, or other similar purposes to be considered used oil. Some examples of products meeting and not meeting the definition of used oil are provided in Table 4-7.

Used oil destined for energy recovery should be labeled “Used Oil Fuel” and steps must be taken to prevent the introduction of any hazardous waste into its storage container.

Oil not meeting the criteria for used oil or used oil not being burned for energy recovery is classified as a designated waste if the following criteria are met: has an oil content of 5% or more; does not contain PCBs (Note - see Table 4-4 for PCB-containing waste); and is not waste edible oil. Designated waste oil must be managed in accordance with section 6-31(5)(b) of the KEGS. Remember, as mentioned above if used oil is mixed with hazardous waste the resulting mixture is a hazardous waste and will be managed as such.

TABLE 4-4

ANALYTICAL-BASED DESIGNATED WASTES

Contaminant	Designated Waste Regulatory Limit ¹	Chemical Abstract Service (CAS) Number ²
Arsenic or its compounds ³	1.5 mg/L ⁴	7440-38-2
Asbestos ⁵	1% ⁶	1332-21-4
Cadmium or its compounds ³	0.3 mg/L ⁴	7440-43-9
Copper or its compounds ³	3 mg/L ⁴	7440-50-8
Cyanide or its compounds ³	1 mg/L ⁴	57-12-5
Hexavalent Chromium or its compounds ³	1.5 mg/L ⁴	18540-29-9
Lead or its compounds ³	3 mg/L ⁴	7439-92-1
Mercury or its compounds ³	0.005 mg/L ⁴	7439-97-6
Organic phosphorus compounds	1 mg/L ⁴	N/A
PCB-containing waste ⁷	2 mg/L or 0.003 mg/L ⁶	1336-36-3
Tetrachloroethylene	0.1 mg/L ⁴	127-18-4
Trichloroethylene	0.3 mg/L ⁴	79-01-6

Notes

1. Unless otherwise specified, a waste is a designated waste if it contains a contaminant which equals or exceeds the regulatory limit.
2. Chemical abstract numbers are listed for only the specific contaminant listed not their compounds.
3. Compounds are applicable only to Designated Waste Regulatory Limits.
4. Applicable to Industrial Sludge with the water content of less than 95% or solid content of more than 5%, or to the following types of waste:
 - Waste slag;
 - Waste particulate matters from air pollution prevention facility;
 - Waste casting sand and waste sand from sand-blast;
 - Waste fire-resistant material and pieces of pottery before glaze coating;
 - Incineration ash;
 - Waste treated by stabilization or solidification;
 - Waste catalyst; or
 - Waste adsorbent and waste absorbent.
5. Waste asbestos consisting of:
 - Waste asbestos generated from the manufacture or process of asbestos or from the removal of structure and building;
 - Residue generated from the polishing, cutting, and processing of solidified asbestos-like slate and particulate matters (PM) collected from the PM collectors from facilities for polishing, cutting, and processing of asbestos containing material; or
 - Vinyl sheets, dust-proof masks, overalls used during the work of asbestos removal.
6. In regards to the 1% limit for Asbestos and the 0.003 mg/L limit for PCB-containing waste, a waste is a designated waste if it exceeds the limit.
7. PCB-containing waste:
 - Liquid waste with the PCB content of more than 2 mg/L; or
 - Waste other than liquid waste with the PCB content of more than 0.003 mg per 1 liter of effluent.

TABLE 4-5

KNOWLEDGE-BASED DESIGNATED WASTES

Designated Waste	Source/Criteria	Comments
Waste generated from specific facilities	Waste synthetic polymer	Waste synthetic resin which is generated from the manufacture process of synthetic resin.
		Waste synthetic rubber which is generated from the manufacture process of synthetic rubber.
	Pesticide manufacture process waste	None.
Corrosive waste	Waste acid with pH of 2.0 or less	For aqueous wastes with a pH of ≤ 2 or ≥ 12.5 assign the characteristic hazardous waste number D002 and manage this waste as a Characteristic Hazardous Waste. In the event you have a non-aqueous waste and the product's accompanying Material Safety Data Sheet indicates the product is corrosive, manage the waste as a Designated Waste.
	Waste alkali with pH 12.5 or more	
Waste organic solvents	Halogenated solvent	Consisting of: Chlorobenzene [108-90-7], Dichlorobenzene [25321-22-6; 541-73-1; 95-50-1; 106-46-7], Dichlorodifluoromethane [75-71-8], Dichloroethane [1300-21-6; 75-34-3; 107-06-2], Dichloromethane [75-09-2], Dichlorophenol [25167-81-1; 120-83-2; 87-65-0; 591-35-5; 583-78-8; 95-77-2], Monochlorophenol [25167-80-0; 95-57-8; 108-43-0; 106-48-9], Tetrachloroethylene [127-18-4], Tetrachloromethane (Carbon tetrachloride) [56-23-5], Trichloroethane [25323-89-1; 71-55-6; 79-00-5], Trichloroethylene [79-01-6], Trichlorofluoromethane [75-69-4], Trichloromethane (Chloroform) [67-66-3], Trichlorophenol [25167-82-2; 95-95-4; 88-06-2; 933-75-5] Trichlorotrifluoroethane [26523-64-8; 76-13-1; 354-58-5].
	Other waste organic solvents	None.

TABLE 4-5 (Cont'd)

KNOWLEDGE-BASED DESIGNATED WASTES

Designated Waste	Source/Criteria	Comments
Waste paint and waste lacquer including the mixture of paint, lacquer and organic solvent generated from the paint or lacquer manufacturing process; waste recycling and paint removal facilities with 5 cubic meters or more of volume or with 3 horsepower or more of power	User Knowledge	None.
Waste oil with oil content of 5% or more.	User Knowledge	This does not apply to PCB-containing wastes, and waste edible oil.
Hazardous material which becomes waste. See Table 4-6 below.	User Knowledge	See Tables 5-5 and 5-6 of the KEGS.
Infectious wastes are designated hazardous wastes.	User Knowledge	See Chapter 8 of the KEGS.

TABLE 4-6

Hazardous Material Which Becomes Waste
(Chemical is regarded as hazardous if its concentrations are more than the listed percentage¹)

No.	Name of chemicals	%
99-4-1	Nitrofen; 1836-75-5	0.1
99-4-2	Dialifos; 10311-84-9	1
99-4-3	DDT; 50-29-3 (Also a listed hazardous waste U061)	1
99-4-4	Dimethoate; 60-51-5 (Also an acute listed hazardous waste P044)	1
99-4-5	Disulfoton; 298-04-4 (Also an acute listed hazardous waste P039)	5
99-4-6	Dieldrin; 60-57-1 (Also an acute listed hazardous waste P037)	1
99-4-7	Leptophos; 21609-90-5	1
99-4-8	Methamidophos; 10265-92-6	1
99-4-9	Monocrotophos; 6923-22-4	1
99-4-10	Benzidine; 92-87-5 (Also a listed hazardous waste U021)	0.1
99-4-11	Lead arsenate; 7784-40-9 (Also a listed hazardous waste U144)	0.1
99-4-12	Bis(2-chloroethyl)ether; 111-44-4 (Also a listed hazardous waste U025)	0.1
99-4-13	Bis(chloromethyl)ether; 542-88-1	0.1
99-4-14	Strychnine; 57-24-9 (Also an acute listed hazardous waste P108)	1
99-4-15	Thallium acetate; 563-68-8 (Also a listed hazardous waste U214)	1
99-4-16	Phenylmercury acetate; 62-38-4 (Also an acute listed hazardous waste P092)	1
99-4-17	Acrinathrin; 101007-06-1	25
99-4-18	Antu; 86-88-4	1
99-4-19	Aldrin; 309-00-2 (Also an acute listed hazardous waste P004)	0.1
99-4-20	Aldicarb; 116-06-3 (Also an acute listed hazardous waste P070)	1
99-4-21	Endosulfan; 115-29-7 (Also an acute listed hazardous waste P050)	1
99-4-22	Endrin; 72-20-8 (Also a characteristic hazardous waste D012 and an acute listed hazardous waste P051)	1
99-4-23	Isobenzan; 297-78-9	1
99-4-24	Aluminum phosphide; 20859-73-8 (Also an acute listed hazardous waste P006)	1
99-4-25	Thallium nitrate; 10102-45-1 (Also a listed hazardous waste U217)	1
99-4-26	Camphechlor; 8001-35-2	1
99-4-27	Captafol; 2425-06-1	0.1
99-4-28	Captan; 133-06-2	0.1
99-4-29	Chlorobenzilate; 510-15-6 (Also a listed hazardous waste U037)	1
99-4-30	Chloropicrin; 76-06-2	1
99-4-31	Chlordan; 57-74-9 (Also a characteristic hazardous waste D020 and a listed hazardous waste U036)	1
99-4-32	Chlordimeform; 6164-98-3	3
99-4-33	Tris (2,3-dibromopropyl)phosphate; 126-72-7 (Also a listed hazardous waste U235)	0.1
99-4-34	Trifluralin; 1582-09-8	1
99-4-35	Paraquat, salts	1
99-4-36	Parathion-methyl; 298-00-0	1
99-4-37	Parathion; 56-38-2 (Also an acute listed hazardous waste P089)	1
99-4-38	Phenylmercuric triethanol ammonium borate	1

TABLE 4-6 (Cont'd)

Hazardous Material Which Becomes Waste
(Chemical is regarded as hazardous if its concentrations are more than the listed percentage¹)

No.	Name of chemicals	%
99-4-39	Pentachlorophenol; 87-86-5 (Also a characteristic hazardous waste D037 and a listed hazardous waste U242)	1
99-4-40	Fenpyroximate; 134098-61-6	25
99-4-41	Phosphamidon; 13171-21-6	1
99-4-42	Fluazinam; 79622-59-6	25
99-4-43	Fluoroacetamide; 640-19-7 (Also an acute listed hazardous waste P057)	1
99-4-44	Pyraclofos; 89784-60-1	25
99-4-45	Pyriminil; 53558-25-1	1
99-4-46	PBBs; 59536-65-1	0.1
99-4-47	PCBs; 1336-36-3.	0.005
99-4-48	HCH; 608-73-1	1.5
99-4-49	Heptachlor; 76-44-8 (Also a characteristic hazardous waste D031 and an acute listed hazardous waste P059)	6
99-4-50	Thallium sulfate; 7446-18-6 (Also an acute listed hazardous waste P115)	1
99-4-51	2-Naphthylamine; 91-59-8	0.1
99-4-52	1,2-Dibromoethane; 106-93-4 (Also a listed hazardous waste U067)	50
99-4-53	1,2-Dibromo-3-chloropropane; 96-12-8 (Also a listed hazardous waste U066)	0.1
99-4-54	4-Aminobiphenyl; 92-67-1	0.1
99-4-55	2,4,5-T; 93-76-5	1
99-5-1	Methyl bromide; 74-83-9 (Also a listed hazardous waste U029)	1
99-5-2	Carbon tetrachloride; 56-23-5 (Also a hazardous waste D019 and a listed hazardous waste U211)	1
99-5-3	Trialkyltin hydroxide	0.1
99-5-4	Arsenic pentoxide; 1303-28-2 (Also an acute listed hazardous waste P011)	0.1

Note

1. Concentrations can usually be determined by using Materials Safety Data Sheets or other product literature. If analysis must be performed, it should be a Total Waste Analysis as opposed to TCLP.

TABLE 4-7

PRODUCTS MEETING/NOT MEETING DEFINITION OF USED OIL

Products Meeting Definition of Used Oil	Products Not Meeting Definition of Used Oil
Engine oil	Antifreeze
Transmission fluid	Brake fluid
Hydraulic fluid	Kerosene
Power steering fluid	Grease
Synthetic oil	Solvents (e.g., petroleum distillates, petroleum naphtha, mineral spirits, etc. used as solvents to solubilize or mobilize other constituents)
Gearbox and differential oil	
Compressor oil	
Refrigeration oil	Animal and vegetable oil (even when used as a lubricant)
Metal-working oil (e.g., cutting oil)	
Electrical insulation oil (e.g., transformer oil)	Cleanup residues from spilled virgin oil
Heat transfer fluid	Virgin oil tank bottoms
Gear oil	Fuels (although blending of fuel and used oil is allowed under 40 CFR §279.10(d))
Bearing oil	
Mineral oil	Wastewater containing small amounts of used oil (note – any used oil <u>recovered</u> from the wastewater would meet definition of used oil)
Laminating oil	
Oils used as buoyants	

4.6 HOW DO I DETERMINE IF THE WASTE IN QUESTION MEETS HAZARDOUS WASTE AND/OR DESIGNATED WASTE CRITERIA? There are two resources you can use to determine whether or not you have a hazardous waste and/or a designated waste: 1) User Knowledge and 2) Chemical Analysis.

User Knowledge: If you or another qualified individual (CEV or BEF) on your installation can determine from documentation (such as MSDSs or ingredients lists) that a waste exhibits one of the characteristics listed in Section B-1 of the KEGS (see Section 4.2) or is a listed waste under section B-2 of the KEGS (see Section 4.3), you can declare the waste to be hazardous by way of user knowledge. Likewise, you can also use user knowledge to demonstrate that a waste is not hazardous or that certain hazardous waste numbers do not apply. For example, user knowledge is typically used to determine if a waste solvent is a “F” listed waste or if an unused product is a “U” or “P” listed waste. You can also use the same available information/knowledge to determine if a waste is a designated waste based on the criteria in Section B-3 of the KEGS (see Section 4.5.1). Do not forget to consider the process in which the materials are used as additional contaminants of concern could be introduced into the waste stream. You will have to supply background information such as MSDSs or ingredient lists to accompany the Hazardous Waste Profile Sheet when disposing of a hazardous waste based upon user knowledge.

Application: Consider isopropyl alcohol applied with cheesecloth to clean electrical parts. Isopropyl alcohol is not an “F”, “U”, or “P” listed waste, but it could be a characteristic hazardous waste due to ignitability. If the process is such that the cheesecloth becomes dry prior to disposal, then ignitability is not a concern. However, if toluene was used instead of isopropyl alcohol, you

would have an “F” listed (F005) hazardous waste regardless of whether the cheesecloth was dry. Both isopropyl alcohol and toluene would be designated wastes as they would fall under the category of “Waste Organic Solvents.”

Chemical Analysis: If you are unsure of what materials might exist in your waste or what properties the waste might have (e.g., flashpoint, pH, etc.), you must perform chemical analysis to determine the identity and quantity of materials in your waste and/or properties associated with you waste. Chemical analysis is used quite often when the product may “pick-up” contamination through use. Some common examples of wastes requiring chemical analysis are:

- Solvents: Can pick up contaminants during cleaning processes. May have a flashpoint close to 140° F
- Rags: Can pick up contaminants from wiping down equipment
- Paint Wastes: Need to determine concentration of hazardous constituents, such as MEK and certain metals (e.g., chromium, lead, cadmium)
- Sealants: Need to confirm/refute presence of metals such as chromium or barium and determine their concentration
- Antifreeze: Can pick up metals (typically lead and/or silver) from contact with cooling system components

Application: Consider isopropyl alcohol applied with cheesecloth to clean aircraft surfaces prior to painting. Isopropyl alcohol is not a “F”, “U”, or “P” listed waste, but waste isopropyl alcohol could be a characteristic hazardous waste due to ignitability or toxicity. If the process is such that the cheesecloth becomes dry prior to disposal, then ignitability is not a concern. However, if dust on the aircraft contains metals (such as chromium, cadmium, or lead) that are picked up by the cheesecloth during the cleaning process, it could be a hazardous waste due to toxicity. There is no way of knowing how much of these regulated contaminants would be picked up in the cheesecloth, but it is reasonable to expect some would. Although we know the isopropyl alcohol would be a designated waste (regardless of whether it is a hazardous waste) due to the fact it’s a “Waste Organic Solvent,” it could also be classified as a designated waste due to contaminant concentrations. To assess the level of contamination for hazardous waste and designated waste determination purposes, analysis would be required (see Section 4.11).

The Hazardous Waste Profile Sheet (DRMS Form 1930) has an area where the identification of the waste as hazardous must be declared as either User Knowledge or Chemical Analysis.

4.7 WHAT IS A WASTE STREAM? A waste stream is the resulting waste from a task or process your organization accomplishes. For example, a cleaner is applied to a rag for cleaning various parts. Once the rag has become too dirty to be effectively used for its intended purpose (i.e., cleaning), the rag becomes a waste. The waste rags generated in this manner would constitute a waste stream.

4.8 WHAT TYPE OF WASTE STREAM DO I HAVE? There are two basic types of waste streams, recurring waste streams that are generated on an ongoing basis (i.e., once/month, once/year, once/3 years, etc.), and one-time waste streams. A one-time waste stream is a waste that will not be generated more than once. Examples of one-time waste streams are spills of a hazardous material or waste, and Time Compliance Technical Orders (these are directives used to implement a one-time aircraft hardware change). If you begin a new process at your organization, or start using a new chemical, you will want to involve the BEF and CEV in evaluating the process to determine if a new waste stream is necessary and if a new HWAP is required. The basic rule of thumb is if you have a HWAP established to collect the waste, the waste is a recurring waste. If you do not have a HWAP established to collect the waste, it is either a one-time waste or a new waste.

4.9 HOW DO I ESTABLISH A WASTE STREAM?

In order to establish a waste stream, the HWAPM must first collect the following information regarding the waste generated:

- waste description/name
- generating process
- generation rate
- chemical constituents (from MSDS or user knowledge)
- Material Safety Data Sheets (MSDS)
- National Stock Numbers (NSN) of all hazardous materials used in generating the waste
- any other pertinent data.

The HWAPM must then complete Part 1 of the PACAF Waste Identification Form (Figure 7-1). Once this is accomplished, the HWAPM will take this form to BEF or CEV (as appropriate) to begin the waste characterization process. When the characterization process is complete, CEV will generate a Hazardous Waste Profile Sheet (HWPS, see Section 7.2) and a waste stream number assigned from the Environmental Management Information System (EMIS) or subsequent Air Force approved/mandated HW module (scheduled to be EESOH-MIS). Do not alter this waste stream number as this is unique to the waste stream and is used to identify and track the waste stream. The shop will use the waste stream number for tracking, labeling, and turn-in purposes.

4.10 DO I NEED TO ROUTINELY CERTIFY THAT MY WASTE STREAM HAS NOT CHANGED? Each shop generating a hazardous waste must re-certify (at least quarterly) that the process generating the waste and the materials used within the process have not changed. If a change in either occurs, the waste must be re-characterized and a new hazardous waste profile sheet accomplished. The following form (Figure 4-1) is used to accomplish the quarterly re-certification for all your waste streams.

Quarterly Waste Stream Verification/Certification

I certify that there has been no change to the (*enter waste stream name and waste stream number*).
This waste stream still consists of (*enter the specific materials used/disposed*).

Unit/Shop: _____

_____ HWAPM Name	_____ HWAPM Signature (electronic)	_____ Telephone	_____ Date
_____ Unit/Shop Supervisor Name	_____ Unit/Shop Supervisor Signature (electronic)	_____ Telephone	_____ Date

Figure 4-1. Quarterly Waste Stream Verification/Certification

NOTE: Quarterly the installation hazardous waste program manager should send an e-mail to each HWAPM requesting that they and their supervisor verify/certify the waste streams of record for their shops.

Upon receipt of the shop's portion of the master waste stream inventory, the shop HWAPM and supervisor should accomplish a shop audit to verify the waste streams of record. Corrections to the inventory must be coordinated with CEV and BEF. Upon completion of the shop waste stream audit, the above Quarterly Waste Stream Verification/Certification should be signed and sent to Environmental Management.

4.11 HOW DO I REQUEST HAZARDOUS WASTE SAMPLING? If you need chemical analysis to determine if a waste is hazardous you must contact the appropriate POC on your installation for support. This process will vary from base to base. Generally you will contact BEF and request the waste be sampled. For new waste streams, sampling is usually accomplished as part of the waste characterization process involved with establishing the waste stream as described in Section 4.9 above (i.e., BEF and/or CEV will identify that sampling is required when they review the PACAF Waste Identification Form). For existing waste streams, sampling is typically accomplished annually for high volume (greater than three 55-gallon drums or equivalent per year) waste streams and every three years for low volume (less than or equal to three 55-gallon drums or equivalent per year) waste streams. An exception to these sampling frequencies is acceptable providing BEF and CEV have reviewed the process and materials used and have determined that no significant change has occurred that would affect the previous analytical results and this review process is properly documented. Refer to the installation hazardous waste sample analysis plan for more detailed information.

Bioenvironmental Engineering or CEV will need a detailed process description and the related MSDSs to determine if sampling is necessary for waste characterization. Coordination with the installation hazardous waste program manager may also be necessary. An appointment to review the waste generating process and obtain the sample will be arranged, the sample will be collected, analyzed, interpreted, and a letter summarizing the results and appropriate waste numbers will be

analyzed, interpreted, and a letter summarizing the results and appropriate waste numbers will be provided to the HWAPM and CEV, along with the actual analytical results. Upon receipt, the HWAPM will use this information to manage the waste. If response to your sampling request is slow, follow-up with BEF or contact the IHWPM for further assistance. Similarly, if analytical results are not provided in a reasonable amount of time (30 days from collection), follow-up (bi-weekly) with BEF or the IHWPM until the results are received. Remember, it is your waste and you have the burden of follow-up actions if required.

4.12 WHAT IF I HAVE AN UNKNOWN WASTE? Unknown wastes should not occur unless the management process (e.g., tracking, recordkeeping, labeling, etc.) breaks down or an abandoned container is discovered. The HWAPM should know what wastes are being placed in each container in a shop. The analysis of an unknown waste is extremely expensive (\$1,000 – \$1,500) and all attempts should be made to identify the process generating the waste and composition of the waste. If this cannot be accomplished, then a full analytical evaluation is necessary because the potential characteristics of concern cannot otherwise be determined. In this case, the waste is usually analyzed for all characteristics except reactivity (i.e., analyzed for ignitability, corrosivity, and toxicity characteristic).

4.13 WHAT ARE SOME COMMON USAF WASTE STREAMS?

The following table (Table 4-8) provides a list of waste streams commonly found in the Air Force along with a summary of the process(es) which generate the waste stream.

TABLE 4-8
COMMON USAF WASTE STREAMS

Waste Stream*	Generating Process
Abrasive Blast Media	Abrasive blasting for depainting, corrosion removal, or cleaning purposes may contain metals that make it a hazardous waste (toxicity characteristic) or a Korean Designated Waste (Wastes containing a hazardous material).
Absorbents contaminated with (c/w) fuel	Clean up of minor shop spills, fluid change-out, filter change-out, or component removal operations. These fuel soaked absorbents, containing JP-8, Diesel, or Gasoline may be ignitable and/or exhibit the toxicity characteristic which makes them a hazardous waste. They may also be a Korean Designated Waste (Wastes containing a hazardous material).
Absorbents c/w oil	Clean up of minor shop spills, fluid change-out, filter change-out, or component removal operations. These oil soaked absorbents containing engine oil, lubricating oils, transmission fluid, and/or hydraulic fluid may be ignitable and/or exhibit the toxicity characteristic which makes them a hazardous waste. They may also be a Korean Designated Waste (Wastes containing a hazardous material and/or Waste oil with an oil content of $\geq 5\%$).
Absorbents c/w POL	Clean up of minor shop spills, fluid change-out, filter change-out, or component removal operations. These oil soaked absorbents containing engine oil, lubricating oils, transmission fluid, hydraulic fluid, fuel, and/or grease may be ignitable and/or exhibit the toxicity characteristic which make it a hazardous waste or a Korean Designated Waste (Wastes containing a hazardous material and/or Waste oil with an oil content of $\geq 5\%$).
Aerosol Cans	Non-empty aerosol cans may be a hazardous waste (ignitable and/or toxicity characteristic due to the contents; reactive due to containing propellant under pressure). Unpunctured empty aerosol cans may also be a hazardous waste (reactive). Typically, aerosol cans are centrally managed on the installation where they are properly punctured, contents evacuated and containerized, and the empty, punctured cans are then managed as scrap metal.
Alodine	Alodine (used for treatment of bare metal to prevent corrosion) is an acid solution that is corrosive and may contain chromium metal (toxicity characteristic), both of which may make it a hazardous waste. It may also be a Korean Designated Waste (Corrosive waste).
Amalgam	Waste amalgam from filling and repair of dental cavities may contain mercury and/or silver (toxicity characteristic metals) which may make it a hazardous waste.
Antifreeze	Seasonal fluid change-out operations. This is usually recycled, but if disposed of, it may contain toxicity characteristic metals (typically lead and silver) which may make it a hazardous waste.
Batteries (alkaline)	Preventive maintenance on various battery-operated equipment. These batteries are usually not regulated, but are generally recyclable or centrally managed.
Batteries (lead-acid/gel cell)	Preventive maintenance on various battery-operated equipment. These batteries may be corrosive and/or exhibit the toxicity characteristic (lead) which make them a hazardous waste. They also may be a Korean Designated Waste (Corrosive waste).
Batteries (lithium)	Preventive maintenance on various battery-operated equipment. These batteries may be ignitable or reactive which makes them a hazardous waste.

TABLE 4-8 (Cont'd)

COMMON USAF WASTE STREAMS

Waste Stream*	Generating Process
Batteries (mercury)	Preventive maintenance on various battery-operated equipment. These batteries may exhibit the toxicity characteristic (mercury) which makes them a hazardous waste.
Batteries (ni-cad)	Preventive maintenance on various battery-operated equipment. These batteries may exhibit the toxicity characteristic (cadmium) which makes them a hazardous waste.
Corrosion Preventative Compound (or items c/w)	General lubrication and corrosion prevention procedures. This waste may include rags, over spray paper, and brushes which may exhibit the toxicity characteristic (barium) making them a hazardous waste.
Developer – NDI	Non-destructive inspection of aircraft components. This waste may exhibit the toxicity characteristic (metals) which makes it a hazardous waste.
Emulsifier – NDI	Non-destructive inspection of aircraft components. This waste may exhibit the toxicity characteristic (metals) which makes it a hazardous waste.
Filter – Aerosol Can Crusher	Filter change-out and preventive maintenance of various aerosol can puncturing units. This waste may exhibit the toxicity characteristic which makes it a hazardous waste.
Filter – Antifreeze Recycler	Filter change-out and preventive maintenance on antifreeze recycler units. This waste may exhibit the toxicity characteristic (lead/silver) which makes it a hazardous waste.
Filter – Chemical Warfare Masks	Preventive maintenance/expired shelf-life filter change-out operations. This waste may exhibit the toxicity characteristic (chromium) which makes it a hazardous waste.
Filter – Fuel	Filter change-out operations of various fuels systems (automotive, aircraft, AGE, distribution systems). This waste may ignitable and/or exhibit the toxicity characteristic (metals, benzene) which makes it a hazardous waste. Metal fuel filters are usually drained and recycled as scrap metal.
Filter – Oil	Filter change-out on various oil systems (automotive, aircraft, AGE, metal working machinery, test stands). This waste is usually drained and recycled as scrap metal.
Filter – Paint Booth	Filter change-out operations for paint booths. This waste may exhibit the toxicity characteristic (metals) which makes it a hazardous waste.
Filter – Parts Washer	Filter change-out and preventive maintenance of various aqueous and non-aqueous parts washers/solvent tanks. This waste may exhibit the toxicity characteristic which makes it a hazardous waste.
Filter – Wash Rack Recycler	Filter change-out and preventive maintenance of wash rack wastewater recycling units. This waste may exhibit the toxicity characteristic (metals) which makes it a hazardous waste.
Fixer Solution	Fluid change-out and preventive maintenance of photographic and x-ray units. This waste may exhibit the toxicity characteristic (silver) which makes it a hazardous waste. This waste is usually turned in for precious metal (silver) recovery.
Formaldehyde	Tissue preservative from veterinary, clinic, or morgue. This waste may be a listed hazardous waste if unused, expired, or spilled (U122).

TABLE 4-8 (Cont'd)

COMMON USAF WASTE STREAMS

Waste Stream*	Generating Process
Fuel Cell Foam Baffles	Inspection and repair of aircraft fuel tanks. This waste may be ignitable and/or exhibit the toxicity characteristic (benzene) which makes it a hazardous waste.
Fuel Waste	Various inspection, maintenance, and repair operations involving fuel systems or components. This material is usually reclaimed and therefore not managed as a waste.
Hydraulic Fluid Waste	Fluid change-out and preventive maintenance of various hydraulic systems (automotive, aircraft, AGE, test stands, heavy equipment). This waste is usually included with oil burned for energy recovery.
Magnetic Particle Oil – NDI	Non-destructive inspection of aircraft components. This waste may exhibit the toxicity characteristic (metals) which makes it a hazardous waste.
Over Spray Paper – Paint	Paper or barrier film used to protect surfaces from paint over spray during various corrosion control procedures. This waste may exhibit the toxicity characteristic (metals) which makes it a hazardous waste.
Over Spray Paper – Solid Film Lubricant	Paper used to protect surfaces (trailers, aircraft guns, munitions, etc.) from the aerosol application of lubricant. This waste may be toxic (lead) which makes it a hazardous waste.
Paint Stripper	Chemical removal of paint (usually aircraft). This waste may be ignitable, exhibit the toxicity characteristic (metals), and/or be a "F" listed hazardous waste. It may also be a Korean Designated Waste (Waste organic solvents containing methylene chloride).
Paint/Primer Wastes (Solvent-Based)	Excess mixed paint, primer, and thinners from corrosion control operations (automotive, aircraft, AGE, or structural). This waste may be ignitable and/or exhibit the toxicity characteristic which makes it a hazardous waste.
Paint/Primer Waste (Water-Based)	Excess mixed paint and primers from structural applications. This waste may be exhibit the toxicity characteristic (metals) which makes it a hazardous waste.
Patches/Q-Tips c/w solvent	Cleaning of small arms, electric components, or surface preparation prior to sealant or paint application. This waste may be a "F" listed hazardous waste and/or exhibit the toxicity characteristic for metals. It may also be a Korean Designated Waste (Wastes containing a hazardous material).
Penetrant – NDI	Non-destructive inspection of aircraft components. This waste may be ignitable and/or exhibit the toxicity characteristic which makes it a hazardous waste.
Rags c/w fuel (MOGAS, JP-8, Diesel)	General shop and/or equipment cleaning or spill clean up. This waste may be ignitable and/or exhibit the toxicity characteristic (benzene) which makes it a hazardous waste.
Rags c/w oil	General shop and/or equipment cleaning or spill clean up. This waste may be ignitable and/or exhibit the toxicity characteristic which makes it a hazardous waste or a Korean Designated Waste (Wastes containing a hazardous material and/or Waste oil with an oil content $\geq 5\%$).
Rags c/w paint	General shop and/or equipment cleaning or spill clean up. This waste may be ignitable and/or exhibit the toxicity characteristic which makes it a hazardous waste or a Korean Designated Waste (Wastes containing a hazardous material).
Rags c/w POL	General shop and/or equipment cleaning or spill clean up. This waste may be ignitable and/or exhibit the toxicity characteristic which makes it a hazardous waste or a Korean Designated Waste (Wastes containing a hazardous material and/or Waste oil with an oil content $\geq 5\%$).

TABLE 4-8 (Cont'd)

COMMON USAF WASTE STREAMS

Waste Stream*	Generating Process
Rags c/w solvent	General shop and/or equipment cleaning or spill clean up. This waste may be ignitable, exhibit the toxicity characteristic, or be a "F" listed waste (Example – Rags contaminated with MEK used for aircraft wipe down) which makes it a hazardous waste. It may also be a Korean Designated Waste (Wastes containing a hazardous material).
Rinse Water – Parts Washers	Fluid change-out of aqueous parts washers. This waste may exhibit the toxicity characteristic which makes it a hazardous waste.
Rust Inhibiting Compound (or items c/w)	Surface metal treatment procedures to prevent corrosion or oxidation. This waste may include rags, over spray paper and brushes contaminated with rust inhibiting compound. This waste may exhibit the toxicity characteristic (chromium) which makes it a hazardous waste or a Korean Designated Waste (Wastes containing a hazardous material).
Sanding Debris	Surface preparation prior to priming or painting. This waste may exhibit the toxicity characteristic (metals) which makes it a hazardous waste or a Korean Designated Waste (Wastes containing a hazardous material).
Sealing Compounds	Joint/seam sealants from aircraft, life support, AGE, automotive operations. Sealing compounds (e.g., B-1/2, Pro-Seal 870, etc.) may exhibit the toxicity characteristic (chromium) which makes it a hazardous waste.
Sludge – Vats/Tanks/Parts Washers	Preventive maintenance of parts washers or solvent tanks used in automotive, aircraft, or AGE operations. This waste may be ignitable, exhibit the toxicity characteristic, and/or be a "F" listed which makes it a hazardous waste or a Korean Designated Waste (Wastes containing a hazardous material, Waste organic solvents, and/or Waste generated from specific facilities).
Solder Waste	Electrical connections in avionics, computers, or other wiring applications. This waste may exhibit the toxicity characteristic (lead, silver) which makes it a hazardous waste.
Solvent Waste	Parts cleaning, surface preparation, or laboratory glassware rinsing operations. This waste may be ignitable, exhibit the toxicity characteristic, and/or be a "F" listed waste which makes it a hazardous waste or a Korean Designated Waste (Waste organic solvents).
Used Oil Fuel	Fluid change-out and preventive maintenance of various oil-containing systems (automotive, aircraft, AGE, metal-working machines, test stands). This waste is usually burned for energy recovery. Used oil fuel typically includes engine oil, lubricating oils, transmission fluid, and/or hydraulic fluid.
Waste Oil	Oil that has been mixed with a hazardous waste or is going to be disposed of in lieu of being burned for energy recovery. This waste may be ignitable and/or exhibit the toxicity characteristic which makes it a hazardous waste. This is a Korean Designated Waste (Waste oil with an oil content of $\geq 5\%$).
Water Bottoms	Condensation from fuel storage in tanks or bowsers. This waste may be ignitable and/or exhibit the toxicity characteristic (benzene) which makes is a hazardous waste.

* c/w = contaminated with

SECTION 5

HAZARDOUS WASTE ACCUMULATION POINTS

5.1 WHAT IS A HAZARDOUS WASTE ACCUMULATION POINT? There are three types of accumulation sites:

1. **Hazardous Waste Accumulation Point (HWAP):** A HWAP is an area at or near the point of generation (typically the shop generating the waste) where the waste is accumulated prior to transfer to the Hazardous Waste Storage Area (HWSA). The HWAP is operated and managed by the Hazardous Waste Accumulation Point Manager (HWAPM). An organization may not collect more than 55 gallons of hazardous waste (or one quart of acute hazardous waste) per waste stream at any HWAP. **Once a container of hazardous waste has reached 90% capacity it must be turned-in to the HWSA within 5 working days.** A container is considered full at 90% capacity to allow for adequate headspace and expansion.
2. **Hazardous Waste Storage Area (HWSA):** The HWSA is a central location where waste transferred from various HWAPs are accumulated and stored for up to one year prior to shipment to a Treatment, Storage, and Disposal Facility (TSDF). The HWSA is not limited to the 55-gallon per waste stream limits. The HWSA is operated and is usually managed by CEV.
3. **Treatment, Storage, and Disposal Facility (TSDF):** This is a permitted facility that has the ability to provide longer-term storage and treatment of hazardous wastes. Most bases do not have a TSDF. The TSDF will typically be a host-nation contractor disposal site off base.

5.2 HOW IS AN ACCUMULATION POINT ESTABLISHED? HWAPs must be formally established and approved by the IHWPM. The following steps must be completed to establish a HWAP:

- The generating organization must identify a need for a HWAP in accordance with the KEGS and the installation Hazardous Waste Management Plan (HWMP).
- The location must be at or near the point of generation and under secure control of the HWAPM. Note: Under certain circumstances where establishing a HWAP at the point of generation is logistically difficult, it is acceptable to establish a HWAP further from the point of hazardous waste generation providing there is a written shop-specific hazardous waste management plan detailing proper transportation methods.
- A HWAP Location Approval Letter (or other form, such as an AF Form 332) must be completed and signed by the unit commander. The letter must be coordinated with Fire Department, Wing Safety, Bioenvironmental Engineering Flight, and the Installation Hazardous Waste Program Manager. When submitting the request for a HWAP, include a facility layout diagram that indicates the location(s) of the hazardous substances stored,

including the location of the HWAP and personal protective equipment. The diagram should also show all available evacuation routes. Do not change the location of the HWAP location without prior coordination and re-approval.

- The squadron commander must appoint or have previously appointed, by letter, a primary HWAPM and at least one alternate HWAPM for each HWAP. Appointed HWAPMs should not have a Date Eligible for Return from Overseas (DEROS) less than six months from the date of appointment.

5.3 WHAT ARE THE REQUIREMENTS FOR AN ACCUMULATION POINT? The following minimum requirements must be followed for proper management of an accumulation point (note – many of these requirements are also included in the Example Hazardous Waste Accumulation Point Inspection Checklist (Figure 6-3)):

5.3.1 General Requirements

- Hazardous waste may only be accumulated at the HWAP or HWSA as specified in the installation HWMP. If an additional HWAP is required, contact CEV.
- Each HWAP must be designed and operated to provide appropriate segregation for different waste streams, such as those which are chemically incompatible. Refer to the compatibility chart in Table 5-1 of this guide or contact the fire department, wing safety, BEF, or CEV to determine compatibility.
- The HWAP must prevent unknowing entry and minimize the possibility of unauthorized entry of persons or livestock into the storage area.
- Each HWAP will have warning signs (National Fire Protection Association or appropriate international sign) appropriate for the waste being accumulated at that site, as outlined in the installation HWMP.
- Waste may be stored at the HWAP until 55 gallons of hazardous waste (or one quart of acute hazardous waste (i.e., “P” Listed waste)) for a single waste stream is reached. The total accumulative drum size per waste stream cannot exceed 55 gallons and/or one quart for acute hazardous waste. Once a waste stream has reached 90% capacity it must be turned-in to the HWSA or DRMO within 5 working days.
- Areas that store containers of ignitable or reactive waste must be located at least 15 meters (50 feet) inside the installation's boundary.
- Areas where containers are stored must be inspected and documented weekly for leaking containers and for deterioration of containers and the containment system caused by corrosion or other factors.

5.3.2 Equipment Requirements

Each HWAP will be equipped with:

- Portable fire extinguishers, fire control equipment appropriate to the material in storage, spill control equipment/material, and decontamination equipment.
- Readily available personal protective equipment (PPE), eyewash units, and shower facilities appropriate to the materials stored (BEF and Safety can provide additional guidance on requirements for specific wastes being accumulated/stored).

5.3.3 Container Requirements

- Containers holding hazardous waste will be in good condition and free of rust, bulges, or severe structural defects.
- A container holding a hazardous waste must always be closed during storage, except when it is necessary to add or remove waste.
- A container holding hazardous waste must not be opened, handled, or stored in a manner that may rupture the container or cause it to leak.
- A funnel will be used to fill closed head drums. If funnel is left in the drum, it must be secured when no waste is being added.
- Containers of flammable liquids must be grounded when transferring flammable liquids from one container to the other.
- Containers must be stored and handled in a manner that will prevent the container from rupturing or leaking.
- Containers must be stored in a manner that prevents excessive movement.
- Containers and pallets must be secured prior to moving.
- Handle drums and containers with equipment designed for that purpose.
- Restrict vehicle movement in the areas where containers are stored to loading and unloading to minimize risk or container damage.
- Containers in outside storage must be protected from the weather.
- Store containers holding liquid wastes away from storm drains, sewers, and water sources.
- Containers must be inspected weekly for signs of leakage, deterioration, and the integrity of the containment system.

- Bowsers, such as those containing used oil or JP-8, must remain secure at all times. All tops and lids should be secured except when adding fluids. Do not place absorbent materials into bowsers. Bowsers should be inspected daily to ensure they are not over 90% full.
- Leaking containers must be over packed or the waste transferred to a proper container immediately.
- Containers must not block entrances/exits in the event of an emergency.
- Allow at least three feet of aisle space for emergency response procedures and thorough inspections.
- Fill liquid-containing containers to no more than 90 percent capacity (generally, allow four inches of headspace in the drum).
- Containers must be protected from freezing.
- Hazardous waste must not be placed in an unwashed container that previously held an incompatible waste or material (see Table 5-1).
- Containers used to store hazardous waste, including overpack containers, must be compatible with the waste materials being stored (see Table 5-1). Coordinate with CEV and the Transportation Office to select the proper containers. In general, hazardous materials (including hazardous waste) must be placed in Performance Oriented Packaging (POP) standard containers and non-hazardous materials may be placed in containers that are in good condition, free from severe rusting, bulging, or severe structural defects. For hazardous materials, Column 8 of the Hazardous Materials Table in 49 CFR §172.101 cites the section in 49 CFR §173 which contains the specific container requirements. Information on how to interpret the packaging codes found in 49 CFR §173 for non-bulk containers is provided in Figure 5-1.
- Incompatible wastes and materials must not be placed in the same container (see Table 5-1).
- A storage container holding a HW that is incompatible with any waste or other materials stored nearby in other containers, piles, open tanks, or surface impoundments must be separated from the other materials or protected from them by means of a dike, berm, wall, or other device (see Table 5-1).
- Containers holding unusable hazardous material or solid waste that is pending chemical analysis will be marked with the following sample collection information:

- Unit/Office Symbol (or Organization Name) of the sample collector (i.e., “Sampled by Unit/Office Symbol”)
- Sample Date
- Unique Sample Number

If the waste has historically been regulated as a hazardous waste, the waste pending analysis should be managed as a hazardous waste and moved to the HWSA to prevent exceeding the HWP storage limits. If the waste has historically been managed as a non-hazardous waste or is a new waste stream, it may remain in the HWP until it is properly characterized. If the analysis indicates the waste is hazardous, then it must be moved to the HWSA within 5 days to prevent exceeding HWP storage limits. Upon receipt of the analysis, the container will be labeled with either a hazardous, non-hazardous or non-regulated waste label as appropriate (see Figures 5-2, 5-3, and 5-4). Regularly check on status of analysis.

- Containers holding used oil or storage sites holding only used oil will be labeled with the words “Used Oil Fuel” if the used oil is being burned for energy recovery.
- Containers holding hazardous waste will be labeled with the following information using the yellow “Hazardous Waste” label shown in Figure 5-2:
 - Name: Enter the name of the installation (e.g., Osan AB, Kunsan AB, Suwon AB, etc.)
 - Address: Enter installation address (street number/name, building number, etc.)
 - Phone: Enter commercial telephone number
 - City: Enter the name of the city where the installation is located
 - State: Enter ROK
 - Zip: Enter the postal code or zip code
 - EPA ID Number: Enter the DODAAC Number of the installation
 - Manifest Document Number: Enter the document number from the DD Form 1348-1A
 - Start Date: Enter the date waste is received at the hazardous waste storage area.
 - EPA Waste Number: Enter the applicable hazardous waste number(s) (e.g., D001 for ignitable waste, D002 for corrosive waste, etc.)
 - D.O.T. Proper Shipping Name and UN of NA No. with Prefix:
 - First and Second Lines: Enter the most appropriate Proper Shipping Name and Identification Number (UN Number) from 49 CFR §172.101.
 - Third Line: Enter the Waste Stream Name and Waste Stream Number
- Containers holding non-hazardous (Designated Waste) waste will be labeled with the following information using the green “Non-Hazardous Waste” label shown in Figure 5-3:
 - Shipper: Enter the name of installation
 - Address: Enter installation address (street number/name, building number, etc.)
 - City, State, Zip: Enter the name of the city where the installation is located, enter ROK for State, and enter the postal code or zip code for Zip.

- Contents: Enter the words “Designated Waste,” and the waste stream name and waste stream number.
- Containers holding non-regulated waste will be labeled with the following information using the blue “Non-Regulated Waste” label shown in Figure 5-4:
 - Shipper: Enter the name of installation
 - Address: Enter installation address (street number/name, building number, etc.)
 - City, State, Zip: Enter the name of the city where the installation is located, enter ROK for State, and enter the postal code or zip code for Zip.
 - Proper D.O.T. Shipping Name: Enter the most appropriate Proper Shipping Name from 49 CFR §172.101.
 - UN or NA No: Enter the corresponding Identification Number (UN Number) from 49 CFR §172.101.
 - Contents: Enter the waste stream name and waste stream number
- Any container holding a hazardous waste or hazardous substance will be labeled with the appropriate DOT label (see Figure 5-5) indicating the hazard class of the waste contained (e.g., flammable, corrosive, etc.). (Note: specific DOT hazard class information is contained in Title 49 §172.101).
- All hazardous waste marks/labeling must be legible and durable (non-removable, not susceptible to climatic conditions/changes), in English and Korean, printed on the surface of a container and not obscured by other labels or attachments such as advertising, that may reduce the visibility or effectiveness.
- All handwriting on labels must be accomplished with a indelible ink pen. All handwriting and stenciling directly on containers should be accomplished with a contrasting colored paint pen, paint, or stencil ink.

The non-bulk packaging codes found in 49 CFR §173 Subpart E are two to four character position codes. The first position indicates the type of packaging and will be one of the following numbers:

- | | |
|-------------------------|-------------------------|
| 1 = Drum | 2 = Wooden barrel |
| 3 = Jerrican | 4 = Box |
| 5 = Bag | 6 = Composite packaging |
| 7 = Pressure receptacle | |

The second position (2nd and 3rd positions for composite packaging) indicates the type of material that the container is made of (note – for composite packaging the first letter indicates the material of the inner receptacle and the second letter indicates the material of the outer packaging). The following letters indicate the type of materials:

- | | |
|--|--|
| A = Steel (all types and surface treatments) | B = Aluminum |
| C = Natural wood | D = Plywood |
| F = Reconstituted wood | G = Fiberboard |
| H = Plastic materials | L = Textile |
| M = Paper, multi-wall | N = Metal (other than steel or aluminum) |
| P = Glass, porcelain, or stoneware | |

The third position (fourth position for composite packaging) will be a number indicating the category of packaging within the same type (note - some packaging codes do not have a number in this position). The following numbers are applicable for this position:

A, B, or H Drums-Jerricans

- 1 - Closed (i.e., non-removable) Head
- 2 - Open (i.e., removable) Head

A or B Boxes

- 1 - Ordinary A or B
- 2 - A or B w/liner lining or coating

C Boxes

- 1 - Ordinary
- 2 - w/sift proof walls

H Boxes

- 1 - Expanded Plastic
- 2 - Solid Plastic

L Bags

- 1 - Sift
- 2 - Water Resistant

M Bags

- 2 - Multi-wall, Water Resistant

Composite Packaging

- 1 - Drum (for the outside packaging)
- 2 - Box (for the outside packaging)

Examples

1A2 – This packaging code stands for a Steel Drum with an open (removable) head

4G – This packaging code stands for a Fiberboard Box

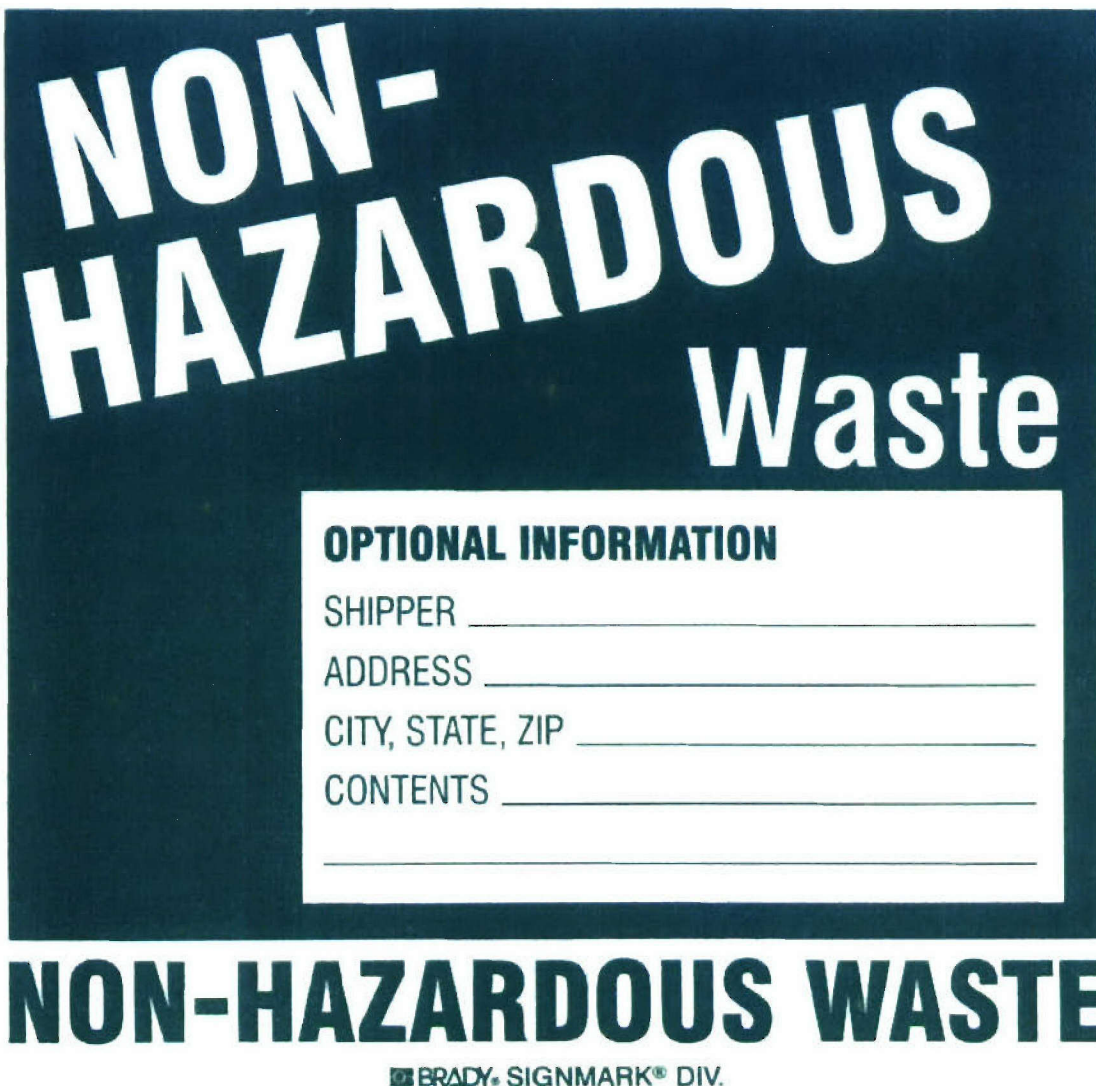
6HA1 – This packaging code stands for composite packaging consisting of a plastic receptacle in a steel drum

Figure 5-1. Interpretation Of Non-Bulk Packaging Codes

<h1>HAZARDOUS WASTE</h1> <p>위해 폐기물</p> <p>FEDERAL LAW PROHIBITS IMPROPER DISPOSAL</p> <p>연방법률은 위해 폐기물의 부적절한 처리를 금지함.</p> <p>IF FOUND, CONTACT THE NEAREST POLICE, OR PUBLIC SAFETY AUTHORITY.</p> <p>만일 위해 폐기물의 부적절한 처리가 발견되면, 가까운 경찰서나 공공안전당국에 연락할 것</p> <p>GENERATOR INFORMATION 폐기물 배출자 인적사항</p>	
NAME _____ 성명	
ADDRESS _____ 주소	PHONE _____ 전화
CITY _____ 도시	STATE _____ 주
ZIP _____ 우편번호	
EPA / MANIFEST ID NO. / DOCUMENT NO. _____ 환경보호국 식별번호/확인문서번호	
ACCUMULATION START DATE _____ 비축기시일자	EPA WASTE NO. _____ 환경보호국 폐기물 번호
<div style="border: 1px solid black; height: 100px; width: 100%;"></div>	
D.O.T. PROPER SHIPPING NAME AND UN OR NA NO. WITH PREFIX 美 운수성이 인가한 위해 폐기물 운반 선박명 및 유엔 및 북미 위해 폐기물 고유번호	
<h2>HANDLE WITH CARE!</h2> <p>취급 주의!</p>	

USFK LABEL 42EK, 1 JUL 93
EDITION OF 1 APR 91, WHICH WILL BE USED.

Figure 5-2. Hazardous Waste Label



**NON-
HAZARDOUS**

Waste

OPTIONAL INFORMATION

SHIPPER _____

ADDRESS _____

CITY, STATE, ZIP _____

CONTENTS _____

NON-HAZARDOUS WASTE

BRADY® SIGNMARK® DIV.

This is a template for a non-hazardous waste label. It features a dark blue background with white text. The top section contains the words 'NON-HAZARDOUS' in a large, bold, sans-serif font, with 'Waste' in a slightly smaller font below it. Below this is a white rectangular box containing the heading 'OPTIONAL INFORMATION' in bold. Underneath the heading are four lines of text: 'SHIPPER', 'ADDRESS', 'CITY, STATE, ZIP', and 'CONTENTS', each followed by a horizontal line for handwritten input. A fifth horizontal line is provided below the 'CONTENTS' line. At the bottom of the label, the words 'NON-HAZARDOUS WASTE' are printed in a large, bold, sans-serif font. Below this, in a smaller font, is the text 'BRADY® SIGNMARK® DIV.'.

Figure 5-3. Non-Hazardous Waste Label (Used For Designated Waste)

NON-REGULATED Waste

THIS WASTE IS NOT
REGULATED BY THE
U.S. ENVIRONMENTAL
PROTECTION AGENCY

GENERATOR INFORMATION (optional)

SHIPPER _____

ADDRESS _____

CITY, STATE, ZIP _____

PROPER D.O.T. SHIPPING NAME _____

UN OR NA NO _____

CONTENTS _____

NON-REGULATED WASTE

Printed By: Lab Safety Supply Inc., Janesville WI 53547-1368

Reorder No. 484

Figure 5-4. Non-Regulated Waste Label
(Used For Non-Hazardous And Non-Designated Waste)






















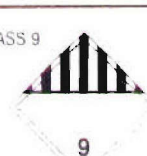

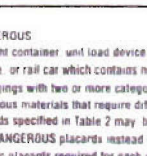
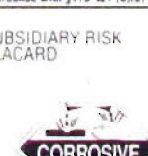




















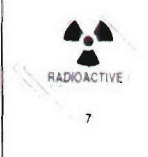



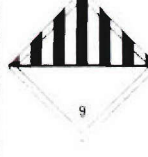

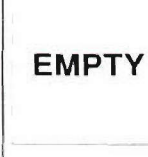







<p>CLASS 1</p>  <p>EXPLOSIVES *Enter Division Number 1.1, 1.2, or 1.3 and compatibility group letter, when required. Placard any quantity.</p>	<p>CLASS 1</p>  <p>EXPLOSIVES 1.4 *Enter compatibility group letter, when required. Placard 454 kg (1,001 lbs) or more.</p>	<p>CLASS 1</p>  <p>EXPLOSIVES 1.5 *Enter compatibility group letter, when required. Placard 454 kg (1,001 lbs) or more.</p>	<p>CLASS 1</p>  <p>EXPLOSIVES 1.6 *Enter compatibility group letter, when required. Placard 454 kg (1,001 lbs) or more.</p>	<p>CLASS 2</p>  <p>OXYGEN Placard 454 kg (1,001 lbs) or more gross weight of either compressed gas or refrigerated liquid.</p>
<p>CLASS 2</p>  <p>FLAMMABLE GAS Placard 454 kg (1,001 lbs) or more.</p>	<p>CLASS 2</p>  <p>NON-FLAMMABLE GAS Placard 454 kg (1,001 lbs) or more gross weight.</p>	<p>CLASS 2</p>  <p>POISON GAS Placard any quantity.</p>	<p>CLASS 3</p>  <p>FLAMMABLE Placard 454 kg (1,001 lbs) or more.</p>	<p>CLASS 3</p>  <p>GASOLINE May be used in place of FLAMMABLE placard displayed on a cargo tank or a portable tank being used to transport gasoline by highway.</p>
<p>CLASS 3</p>  <p>COMBUSTIBLE Placard a combustible liquid when transported in bulk. See §172.504(f)(2) for use of FLAMMABLE placard in place of COMBUSTIBLE placard.</p>	<p>CLASS 3</p>  <p>FUEL OIL May be used in place of COMBUSTIBLE on a placard displayed on a cargo tank or portable tank being used to transport by highway fuel oil not placed as a flammable liquid.</p>	<p>CLASS 4</p>  <p>FLAMMABLE SOLID Placard 454 kg (1,001 lbs) or more.</p>	<p>CLASS 4</p>  <p>SPONTANEOUSLY COMBUSTIBLE Placard 454 kg (1,001 lbs) or more.</p>	<p>CLASS 4</p>  <p>DANGEROUS WHEN WET Placard any quantity of Division 4.3 material.</p>
<p>CLASS 5</p>  <p>OXIDIZER Placard 454 kg (1,001 lbs) or more.</p>	<p>CLASS 5</p>  <p>ORGANIC PEROXIDE Placard any quantity. TYPE B temperature controlled. Placard 454 kg (1,001 lbs) or more other than TYPE B temperature controlled.</p>	<p>CLASS 6</p>  <p>POISON-INHALATION HAZARD Placard any quantity of 6.1 Zone A or B inhalation hazard only.</p>	<p>CLASS 6</p>  <p>POISON Placard 454 kg (1,001 lbs) or more of PG I or II other than Zone A or B inhalation hazard.</p>	<p>CLASS 6</p>  <p>KEEP AWAY FROM FOOD Placard 454 kg (1,001 lbs) or more of PG III.</p>
<p>CLASS 7</p>  <p>RADIOACTIVE Placard any quantity packages bearing RADIOACTIVE YELLOW-III labels only. Certain low specific activity radioactive materials in "exclusive use" will not bear the label, but the Radioactive placard is required for exclusive use shipments of low specific activity material and surface contaminated objects transported in accordance with §173.427 (b)(3) or (c).</p>	<p>CLASS 8</p>  <p>CORROSIVE Placard 454 kg (1,001 lbs) or more.</p>	<p>CLASS 9</p>  <p>MISCELLANEOUS Not required for domestic transportation. A bulk packaging containing a Class 9 material must be marked with the appropriate ID number displayed on a Class 9 placard, an orange panel or a white square-on-point display.</p>	<p>CLASS 9</p>  <p>DANGEROUS A freight container, unit load device, transport vehicle, or rail car which contains non-bulk packagings with two or more categories of hazardous materials that require different placards specified in Table 2 may be placarded with DANGEROUS placards instead of the specific placards required for each of the materials in Table 2. However, when 1,000 kg (2,205 lbs) or more of one category of material is loaded at one loading facility, the placard specified in Table 2 must be applied.</p>	<p>CLASS 9</p>  <p>SUBSIDIARY RISK PLACARD Class numbers do not appear on a subsidiary risk placard.</p>
<p>UN or NA Identification Numbers</p> <p>PLACARDS OR ORANGE PANELS</p>  <p>Appropriate Placard must be used.</p> <p>White square background required for placard for highway route controlled quantity radioactive material and for rail shipment of certain explosives and poisons, and for flammable gas in a DOT 113 tank car (see §§172.507 and 172.510).</p>				
<p>MUST BE DISPLAYED ON: (1) Tank Cars, Cargo Tanks, Portable Tanks, other Bulk Packaging, and (2) On vehicle or containers containing large quantities (8,820 lbs.) in non-bulk packages of only a single hazardous material, and certain quantities (2,205) of a material poisonous by inhalation in Hazard Zone A or B, having the same proper shipping name and identification number.</p>				

Figure 5-5. Dot Hazard Class Labels

<p>CLASS 1 Explosive 1.1 1.2 1.3</p>  <p>*Include appropriate division number and compatibility group letter</p>	<p>CLASS 1 Explosive 1.4</p>  <p>*Include appropriate compatibility group letter</p>	<p>CLASS 1 Explosive 1.5</p>  <p>*Include appropriate compatibility group letter</p>	<p>CLASS 1 Explosive 1.6</p>  <p>*Include appropriate compatibility group letter</p>	<p>CLASS 2 Division 2.1</p>  <p>Flammable gas</p>	<p>CLASS 2 Division 2.2</p>  <p>Non-flammable gas</p>	<p>CLASS 2 Division 2.2</p>  <p>Oxygen</p>
<p>CLASS 2 Division 2.3</p>  <p>Poison gas</p>	<p>CLASS 3</p>  <p>Flammable liquid</p>	<p>CLASS 4 Division 4.1</p>  <p>Flammable solid</p>	<p>CLASS 4 Division 4.2</p>  <p>Spontaneously Combustible</p>	<p>CLASS 4 Division 4.3</p>  <p>Dangerous when wet</p>	<p>CLASS 5 Division 5.1</p>  <p>Oxidizer</p>	<p>CLASS 5 Division 5.2</p>  <p>Organic peroxide</p>
<p>CLASS 6 Division 6.1</p>  <p>Poison Inhalation Hazard only, Zone A or B</p>	<p>CLASS 6 Division 6.1</p>  <p>POISON Placard 454 kg (1 001 lbs) or more of PG I or II other than Zone A or B, inhalation hazard</p>	<p>CLASS 6 Division 6.1</p>  <p>Poison PG III</p>	<p>CLASS 6 Division 6.2</p>  <p>infectious substance</p>	<p>CLASS 7</p>  <p>Radioactive WHITE I</p>	<p>CLASS 7</p>  <p>Radioactive YELLOW II</p>	<p>CLASS 7</p>  <p>Radioactive YELLOW III</p>
<p>CLASS 7</p>  <p>Radioactive YELLOW-III</p>	<p>CLASS 8</p>  <p>Corrosive</p>	<p>CLASS 9</p>  <p>Miscellaneous</p>	<p>SUBSIDIARY RISK LABELS</p>  <p>Explosive Flammable gas Flammable liquid Flammable solid Corrosive Oxidizer Poison Spontaneously Combustible Dangerous when wet</p> <p>The class number may not be displayed on a subsidiary label (see Section 7.2.4.2)</p>	<p>EMPTY</p>	<p>FOR AIRCRAFT</p>  <p>Cargo Aircraft Only</p> 	
<p>TRANSITION-2001</p>  <p>EXPLOSIVE A</p>	<p>TRANSITION-2001</p>  <p>EXPLOSIVE B</p>	<p>TRANSITION-2001</p>  <p>EXPLOSIVE C</p>	<p>TRANSITION-2001</p>  <p>BLASTING AGENT</p>	<p>TRANSITION-2001</p>  <p>FLAMMABLE SOLID</p>	<p>TRANSITION-2001</p>  <p>IRRITANT</p>	

HAZARDOUS MATERIALS MARKINGS



Figure 5-5. Dot Hazard Class Labels (Cont'd)

5.3.4 Secondary Containment Requirements

Container storage areas must have a secondary containment system meeting the following:

- Be sufficiently impervious in order to contain leaks, spills, and accumulated precipitation until the collected material is removed.
- The secondary containment system must have sufficient capacity to contain 10% of the volume of stored containers, or the volume of the largest container, whichever is greater.
- Rainwater captured in secondary containment areas should be inspected and/or tested prior to release. The inspection or testing must be reasonably capable of detecting contamination by the hazardous waste in containers. Contaminated water shall be treated as hazardous waste until determined otherwise.
- Storage areas that store containers holding only wastes that do not contain free liquids need not have a containment system as described above, providing the storage areas is sloped or is otherwise designed and operated to drain and remove liquid resulting from precipitation, or the containers are elevated or are otherwise protected from contact with accumulated liquid.
- Drain valves within the secondary containment area must be kept closed at all times except when draining precipitation or removing spill residue from the area.

5.3.5 Documentation Requirements for an Accumulation Point

- Each HWAP must have the Accumulation Point Approval letter, Accumulation Point Manager Appointment letter, and the site-specific contingency plan posted in plain view.
- Each HWAP must have base approved training documentation/certification showing up-to-date hazardous waste training for the HWAPM and alternate.
- Each HWAP must have an inventory of hazardous waste streams belonging to the HWAP along with completed PACAF Waste Identification Form and Hazardous Waste Profile Sheet for each waste stream listed on the inventory. These items should be kept in the Hazardous Waste Continuity Binder as described in the next bullet.
- HQ PACAF Policy requires that each HWAP must have a Hazardous Waste Continuity Binder. This binder contains several tabs that store information regarding the waste streams generated or stored in the accumulation point or storage area binder to include the items listed in Table 6-1. The general retention period for all HWAP records is three years. Additional information on continuity binders is provided in Sections 6.9 and 6.10.

- A HWAP Accumulation Log is maintained for each waste container located at a HWAP. This log is used to track the contents of the container and includes, but it not limited to, container number, date, waste added, amount (in pounds/gallons), and name of person adding the waste. An example of an accumulation log is provided in Figure 5-6 below.

[illegible]

*Amount added is usually in units of either pounds (lb) or gallons (gal)

Figure 5-6. Hazardous Waste Accumulation Log

5.4 HOW DO I DETERMINE IF MY WASTES ARE COMPATIBLE? The following table (Table 5-1) lists common incompatible materials.

TABLE 5-1
COMMON INCOMPATIBLE MATERIALS

Potential consequences are heat generation and violent reaction¹	
Group 1-A	Group 1-B
Acetylene sludge	Acid sludge
Alkaline caustic liquids	Acid and water
Alkaline cleaner	Battery acid
Alkaline corrosive liquids	Chemical cleaners
Alkaline corrosive battery fluid	Electrolyte acid
Caustic wastewater	Etching acid liquid or solvent
Lime sludge and other corrosive alkalis	Pickling liquor and other corrosive acids
Lime wastewater	Spent acid
Lime and water	Spent mixed acid
Spent caustic	Spent sulfuric acid

¹ Mixing a Group A material (left column) with a Group B material (right column) yields the potential consequence noted.

Potential consequences are fire/explosion and generation of flammable hydrogen gas¹	
Group 2-A	Group 2-B
Aluminum	Any waste in Group 1-A or 1-B
Beryllium	
Calcium	
Lithium	
Potassium	
Sodium	
Zinc powder	
Other reactive metals and metal hydrides	

¹ Mixing a Group A material (left column) with a Group B material (right column) yields the potential consequence noted.

TABLE 5-1 (Cont'd)
COMMON INCOMPATIBLE MATERIALS

Potential consequences are fire/explosion or heat generation, and generation of flammable/toxic gases¹	
Group 3-A	Group 3-B
Alcohols	Any Group 1-A or 1-B concentrated waste
Water	Calcium
	Lithium
	Metal hydrides
	Potassium
	Sulfuryl Chloride, Thionyl Chloride, PCl ₂ , Methyl radical, Trichlorosilyl radical
	Other water-reactive waste

¹ Mixing a Group A material (left column) with a Group B material (right column) yields the potential consequence noted.

Potential consequences are fire, explosion or violent reaction¹	
Group 4-A	Group 4-B
Alcohols	Concentrated Group 1-A or 1-B wastes.
Aldehydes	Group 2-A wastes
Halogenated hydrocarbons	
Nitrated hydrocarbons	
Unsaturated hydrocarbons	
Other reactive organic compounds and solvents	

¹ Mixing a Group A material (left column) with a Group B material (right column) yields the potential consequence noted.

Potential consequences are generation of toxic hydrogen cyanide or hydrogen sulfide gas¹	
Group 5-A	Group 5-B
Spent cyanide and sulfide solutions	Group 1-B wastes

¹ Mixing a Group A material (left column) with a Group B material (right column) yields the potential consequence noted.

TABLE 5-1 (Cont'd)
COMMON INCOMPATIBLE MATERIALS (Cont'd)

Potential consequences are fire, explosion or violent reaction¹	
Group 6-A	Group 6-B
Chlorates	Acetic acid and other organic acids
Chlorine	Concentrated mineral acids
Chlorites	Group 2-A wastes
Chromic acid	Group 4-A wastes
Hyphochlorites	Other flammable and combustible wastes
Nitrates	
Nitric acid, fuming	
Perchlorates	
Permanganates	
Peroxides	
Other strong oxidizers	

¹ Mixing a Group A material (left column) with a Group B material (right column) yields the potential consequence noted.

SECTION 6

HAZARDOUS WASTE ACCUMULATION POINT MANAGERS

6.1 WHAT IS A HAZARDOUS WASTE ACCUMULATION POINT MANAGER? A hazardous waste accumulation point manager (HWAPM) is an individual appointed by his/her commander, in writing, to be responsible for hazardous waste accumulated within his/her shop. HWAPMs are responsible for assigned accumulation points and waste streams generated by the processes from his/her shop that are to be temporarily stored at the accumulation point(s). The HWAPM is also responsible for coordination with the Environmental Flight (CEV), Bioenvironmental Engineering Flight (BEF), Fire Department, and Wing Safety for approval of the location and set up of a HWAP.

6.2 WHAT ARE THE PRIMARY ROLES OF A HWAPM? The HWAPM is responsible for all aspects of the waste generated and accumulated at his/her shop. This includes:

- Maintaining a current hazardous waste stream inventory
- Maintaining a completed PACAF Waste Identification Form (Figure 7-1) for each waste stream
- Maintaining a site specific spill plan
- Conducting weekly inspections
- Completing waste turn-in documentation
- Maintaining a HWAP continuity binder
- Labeling/posting, documentation, tracking, transportation, training, security, and overall management of the HWAP

6.3 WHAT SHOULD BE INCLUDED IN A HAZARDOUS WASTE INVENTORY? A waste stream inventory describes all hazardous and designated waste streams generated on the installation. In accordance with AFI 32-7042, all Air Force installations must have a waste stream inventory that lists at least:

- Generating activity's identity
- Generating activity's location
- Unique waste stream number
- Estimated annual quantity disposed
- Disposal location
- Disposal method
- Waste characteristics (e.g., hazardous and applicable waste numbers or designated)

The installation hazardous waste stream inventory is maintained by CEV with periodic assistance of all HWAPMs. On a quarterly basis CEV will provide the shops with their individual portion of this inventory for their shop-level verification/certification (see Section 4.10 for an example of the Quarterly Waste Stream Verification/Certification Form).

The PACAF Waste Identification Form (Figure 7-1) should be completed for each waste stream to capture the above information for this inventory. The HWAPM should notify CEV and BEF if any changes to the inventory occur.

6.4 WHAT IS A SPILL? A spill is an uncontrolled release of a liquid or solid substance. Spills of hazardous substances can cause harm to both people and the environment, therefore, proper response to spills is a top priority. To ensure proper response, all DoD installations must prepare, maintain, and implement a Spill Prevention Control and Countermeasure (SPCC) Plan and an Oil and Hazardous Substance (OHS) Pollution Contingency Plan, for the prevention, control, cleanup, and reporting of POL and hazardous substance incidents. These plans may be consolidated into one plan (Spill Prevention and Response Plan) meeting the requirements of both. Since these plans address contingencies base-wide, they are best utilized by designated base response personnel/teams. For individual shops/work areas, a site-specific spill plan is used.

6.5 WHAT IS A SITE SPECIFIC SPILL PLAN? A site-specific spill plan (or site-specific contingency plan) is a short checklist tailored to your shop that describes the immediate actions to take in the event of a spill. All shops/work areas which use and/or store hazardous substances (including hazardous wastes) must have a site specific spill plan. The plan:

- Must be posted in plain view and be accessible to all shop personnel. In addition, a separate copy of the plan should be kept in the HWAP Continuity Binder.
- Should be certified by a professional engineer and approved by the Wing Commander or Chairman of the Environmental, Safety, and Occupational Health (ESOH) Council.
- Must clearly specify procedures for notifying base response personnel that a spill has occurred. See Section 6.6 for an example of a spill report.
- Should state the location and type of all response equipment (e.g., fire extinguishers, absorbent pads, etc.) and personal protective equipment appropriate for the types of wastes accumulated/stored.
- Should address specific circumstances in which shop personnel can control and cleanup small spills.
- Should include a facility layout diagram that indicates the location(s) of the hazardous substances stored, including the location of the HWAP and personal protective equipment. The diagram should also show all available evacuation routes.

Figure 6-1 below provides an example of a simple building layout for a typical shop setting. It illustrates that the HWAP information can be added to existing Fire Evacuation diagrams, which are already required for shop personnel/supervisors to maintain.

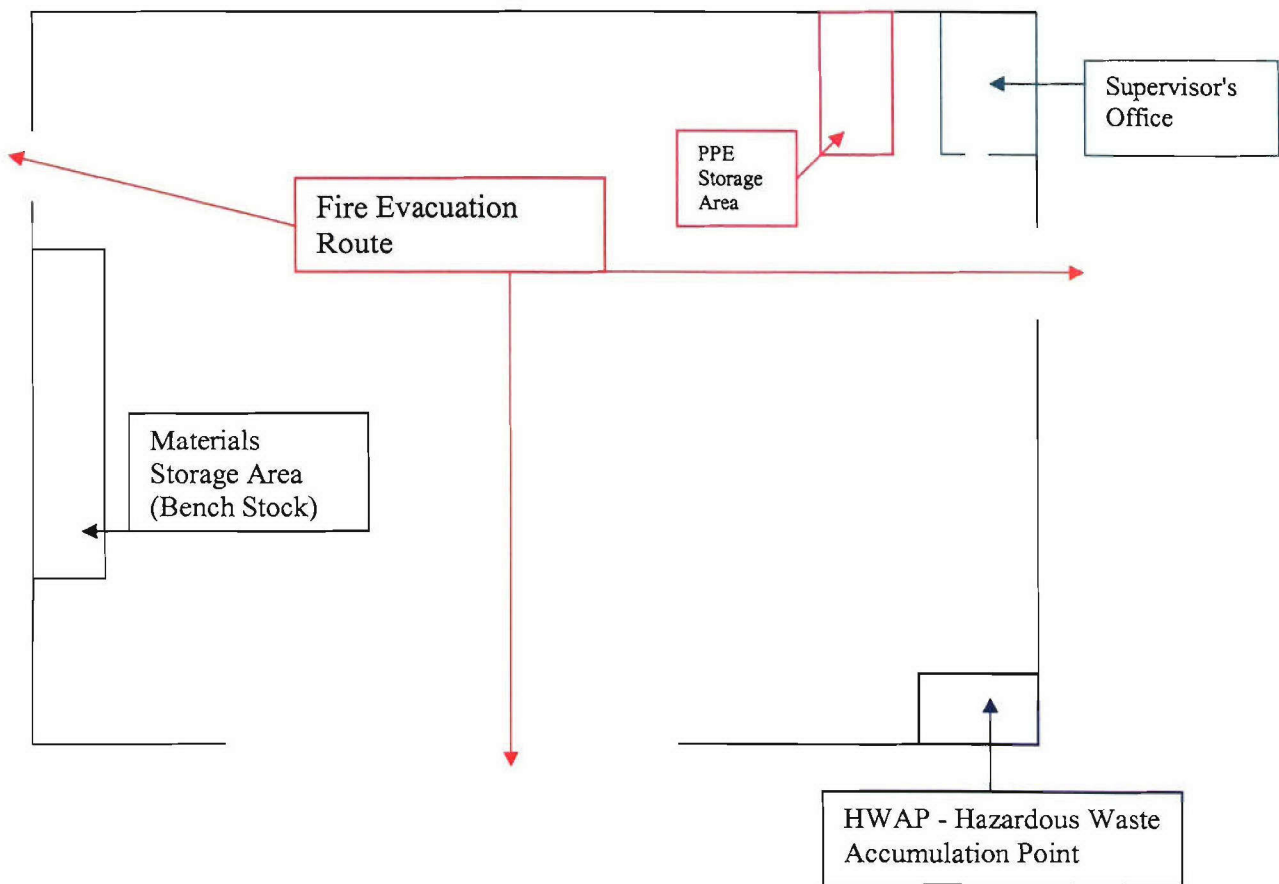


Figure 6-1. Example Of Building Layout Diagram

6.6 WHAT INFORMATION SHOULD BE REPORTED IN THE EVENT OF A SPILL?

The following information is required on all accidental releases or spills. Information shall be completed in full by applicable shift supervisor on duty at the time of the incident. The completed form shall be faxed, e-mailed, or hand carried to your base CEV office within 24-hours of the spill.

1. Reporters name, organization, and duty phone _____
2. Date and time of release _____
3. Location of release _____
4. Notification of Fire Department Yes / No by: _____ Time: _____
5. Equipment/Facility: Involved include Aircraft type & tail number or equipment model number:

6. Root cause of release:

7. Type of material released: _____
8. Estimated quantity of release in gallons: _____
 Spills on a hard surface: 4 ft. diameter = 1 gal 8 ft. diameter = 4 gal
 2 ft. diameter = .25 gal 6 ft. diameter = 2 gal 10 ft. diameter = 6 gal
9. Corrective action taken: _____

10.

		Yes	No	Est. Quantity (gal)
a.	Was the release contained on a hard surface? (Concrete, Asphalt)			
b.	Did the release enter the storm drain or surface water?			
c.	Did the release enter the sanitary sewer?			
d.	Did the process owner have sufficient clean-up capabilities?			N/A
e.	Did the spill reach and soak into the soil?			
f.	Was the spill cleaned within 24 hours?			N/A
To be completed by CEV		CEV POC: _____		
a. Is the spill reportable? Yes / No		b. Any continuing threat to the environment? Yes / No		

Figure 6-2. Example of Hazardous Material Release Report

6.7 WHAT MUST I DO DURING THE WEEKLY HWAP INSPECTION? The HWAPM must conduct weekly inspections of the accumulation point. These inspections are an effective way to ensure all applicable accumulation point requirements are met. An example of a checklist that can be used for accomplishing these inspections is provided in Figure 6-3 below.

Hazardous Waste Accumulation Point Number: _____

Inspected by (Name, Title, Phone): _____

Items	Yes/ Verified	No/Not Verified	N/A	Date
General Items				
1. Is the means of entry into the hazardous waste accumulation point adequately controlled (secured)?				
2. Verify the hazardous waste accumulation point has warning signs (National Fire Protection Association or appropriate international sign) appropriate for the waste being accumulated at that site, as specified in paragraph 6-3b(1) of the KEGS.				
3. Is the hazardous waste accumulation point clean, free from evidence of spills, and in good condition?				
4. Are chemically incompatible wastes adequately segregated (see Table 5-1)?				
5. Verify that the total quantity of any single waste stream stored at the hazardous waste accumulation point does not exceed 55 gallons for a hazardous waste stream, or one quart for an acute hazardous waste stream.				
6. Verify that hazardous wastes are being transferred to the hazardous waste storage area within 5 working days after reaching maximum storage limit.				
7. Are ignitable or reactive waste located at least 50 feet inside the installation's property boundary?				
Contingency Items				
8. Verify site-specific contingency plan location.				
9. Verify telephone/warning device is easily accessible in case of an emergency.				
10. Verify spill cleanup materials are readily available.				
11. Verify fire extinguisher is fully charged and accessible.				
12. Verify emergency eyewash station is in good condition, functioning, and accessible.				
13. Verify all personal protective equipment is available, in good condition, and being used.				
Container Items				
14. Are all containers used to store hazardous waste in good condition (i.e., not bulging, rusting, damaged, or dented) and not leaking?				
15. Are containers inspected at least weekly?				
16. Are all containers used to store hazardous waste kept closed, except during adding or removing of waste?				
17. Are containers marked with a label indicating the applicable hazard class of the waste contained (i.e., flammable, corrosive, reactive, etc.)?				
18. Do all containers holding hazardous waste have a bilingual "Hazardous Waste" label?				
19. Do all containers holding non-hazardous waste have a bilingual "Non-hazardous Waste" or "non-regulated waste" label as appropriate?				
20. Are all containers holding used oil to be burned for energy recovery labeled with the words "Used Oil Fuel" (in English and Korean)?				

Figure 6-3. Example of Hazardous Waste Accumulation Point Inspection Checklist

6.8 WHAT WASTE TURN-IN DOCUMENTATION IS REQUIRED? The HWAPM must complete the necessary documentation for turning waste into the HWSA or DRMO. More specific information on Waste Turn-In Documentation can be found in Section 7.

6.9 WHAT IS A CONTINUITY BINDER? A continuity binder is a single file that is maintained at each accumulation point to provide a description and supporting documentation for every waste stream generated by or accumulated at the accumulation point. The HWAPM should compile and maintain the essential information associated with management of their HWAP. See Base CEV policy or the HW Management Plan to determine the required documentation. At a minimum, the binder must contain the information/recordkeeping spelled out in Section 6.10.

6.10 WHAT INFORMATION MUST BE IN THE CONTINUITY BINDER? The continuity binder will contain several tabs that store information regarding the waste streams generated or stored in the accumulation point. The continuity binder has the following tabs and information:

TABLE 6-1
CONTINUITY BINDER CONTENTS

Tab	Current Title of Sections
Tab A	Accumulation point designation letter, accumulation point manager appointment letter, and accumulation point manager training certificate
Tab B	Physical Layout (including location of containers, spill response equipment, and site-specific contingency plan)
Tab C	HQ PACAF/CEVQ Hazardous Waste Accumulation Point Manager Handbook Korea
Tab D	Weekly Inspection Checklists and Reports
Tab E	Hazardous Waste Stream Inventory, PACAF Waste Identification Forms, Hazardous Waste Profile Sheets, Material Safety Data Sheets, Analytical Results, Container Log, Quarterly Waste Stream Verification/Certification

6.11 WHAT ARE THE TRAINING REQUIREMENTS FOR HWAPMs? All HWAPMs and alternates must receive training from a qualified trainer (usually CEV). Initial training must be completed prior to assuming hazardous waste duties and refresher training is required annually. If training cannot be accomplished before assumption of duties, the individual must work under the supervision of a trained individual, but receive training within 3 months. Subjects covered by this training include:

- Hazardous waste identification
- Pertinent hazardous waste requirements
- Emergency procedures, equipment, warning signs and systems, and decontamination
- Drum/container handling and storage, safe use of hazardous waste equipment, proper sampling procedures
- Employee protection, personal protective equipment, safety and health hazards, hazard communication, and worker exposure
- Record-keeping, security, inspections, contingency plans, storage requirements, and transportation requirements

Once the training has been completed, the trainer will provide a training certificate to the individual. Contact CEV for additional guidance and/or sources of training. Supplemental training is available on the PACAF Environmental Compliance Assessment Training (ECAT) Program available on the installation intranet.

SECTION 7

TURNING IN HAZARDOUS WASTE

7.1 WHAT ARE THE REQUIREMENTS FOR HAZARDOUS WASTE TURN-IN? Once a drum has reached 90% capacity, it must be turned into the HWSA. Contact the HWSA to arrange for transport of the waste from the HWAP to the HWSA. Generators or generating activities shall produce or obtain one copy of the following documents and ensure they are included with the applicable waste being transferred comply with the following procedures to ensure transfer of hazardous wastes from a unit HWAP to the HWSA:

TABLE 7-1

HAZARDOUS WASTE TURN-IN REQUIRED DOCUMENTS

Document	Coordinating Offices
PACAF Waste Identification Form (see Figure 7-1)	Shop, Environmental Flight, Bioenvironmental Engineering
Hazardous Waste Profile Sheet (DRMS Form 1930)	Environmental Flight, Bioenvironmental Engineering, DRMO
DD Form 1348-1A (Disposal Turn-In Document)	HWSA, Environmental Flight, Base Supply
Pertinent Material Safety Data Sheets (MSDSs)	Bioenvironmental Engineering, HAZMART Pharmacy
Analytical results (if applicable);	Bioenvironmental Engineering
HWAP Accumulation Log for the container	Shop

7.2 WHO IS RESPONSIBLE FOR COMPLETING THE HAZARDOUS WASTE PROFILE SHEET (HWPS)? The HWPS will be accomplished jointly by CEV and BEF using the Environmental Management Information System (EMIS) hazardous waste module or subsequent Air Force approved/mandated HW module. Keep in mind that CEV is ultimately responsible for the overall management of the hazardous waste program and may be required to complete the HWPS in its entirety if BEF cannot support this effort.

7.3 WHAT MUST I DO TO TURN-IN EXISTING, RECURRING WASTE STREAMS? These types of waste streams should have previously been characterized and have waste stream numbers and active HWPSs. When the hazardous waste container has reached 90% capacity, the drum is considered full and ready for turn-in. Transport the container to the central HWSA or DRMO within 5 workdays. If there have been any changes to the waste stream (e.g., new process, new products), inform CEV and BEF.

7.4 WHAT MUST I DO TO TURN-IN NEW, RECURRING WASTE STREAMS?

A HWPS must be established for each new waste stream being turned-in. To accomplish the HWPS, the process begins with the PACAF Waste Identification Form (Figure 7-1) which must be initiated by the shop. Once this form is completed by the shop, BEF, and CEV, a HWPS will be generated from EMIS or subsequent Air Force approved HW module. This process should be initiated when establishing a HWAP for the new waste. The HWSA or DRMO will not accept a new waste without a waste stream number and HWPS being established. Transport the container to the HWSA or DRMO within 5 workdays.

7.5 WHAT MUST I DO TO TURN-IN A ONE-TIME WASTE? When a one-time waste is to be generated, contact CEV for guidance. This type of waste must be reviewed on a case-by-case basis to determine if a HWPS is needed. If this is expired shelf life hazardous material, then ensure you have an up-to-date MSDS.

7.6 WHAT MUST I DO FOR TURN-IN OF BOWSERS? When the bowser reaches 90% capacity, contact the HWSA or DRMO to arrange turn-in.

Part 1, Waste Stream Information

A. GENERATOR INFORMATION

- | | |
|--|------------------------------|
| 1. HW Accumulation Point Mgr: _____ | 2. Unit/Office Symbol: _____ |
| 3. Telephone: _____ | 4. Building Number: _____ |
| 5. HW Accumulation Point Number: _____ | 6. Waste Stream Name: _____ |
| 7. Waste Stream Number: _____ | 8. HWPS Number: _____ |
9. Reason for submitting form:
☐ New Waste Stream ☐ Periodic Recharacterization ☐ Change in Process/Waste Stream

B. PROCESS INFORMATION

1. Specific Process Generating the Waste: _____

2. Materials Used in the Process _____

3. Estimated Amount Generated Annually: _____
4. Type and Size of Container Used to Collect Waste: _____
5. Hazardous Waste Profile Sheet Characterization Date: _____
6. Hazardous Waste Profile Sheet Re-Characterization Due Date: _____
7. Applicable Sample Number(s) (attach results): _____

C. MSDS INFORMATION (attach appropriate MSDSs to this form)

- | | |
|----------------------------------|----------------------------------|
| 1. National Stock Number: _____ | 1. National Stock Number: _____ |
| 2. Company Name: _____ | 2. Company Name: _____ |
| 3. Part Number/Trade Name: _____ | 3. Part Number/Trade Name: _____ |
| 4. Nomenclature: _____ | 4. Nomenclature: _____ |
| 5. MSDS Serial Number: _____ | 5. MSDS Serial Number: _____ |
-
- | | |
|----------------------------------|----------------------------------|
| 1. National Stock Number: _____ | 1. National Stock Number: _____ |
| 2. Company Name: _____ | 2. Company Name: _____ |
| 3. Part Number/Trade Name: _____ | 3. Part Number/Trade Name: _____ |
| 4. Nomenclature: _____ | 4. Nomenclature: _____ |
| 5. MSDS Serial Number: _____ | 5. MSDS Serial Number: _____ |

D. Shop Waste Certification

I certify the information regarding the process generating the waste and the materials used in the process are accurate and represent the composition of this waste.

HWAP Manager Name/Grade

Signature

Date

Unit/Shop Supervisor Name/Grade

Signature

Date

Figure 7-1. PACAF Waste Identification Form

Part 2, Bioenvironmental Engineering

A. Material Characterization (Optional Information)

- | | |
|------------------------|-----------------------|
| 1. Color: _____ | 2. Density: _____ |
| 3. BTU/LB: _____ | 4. Ash Content: _____ |
| 5. Total Solids: _____ | 6. Layering: _____ |

B. Requires Analysis

Yes ☐ No ☐

New Sample Number: _____

C. Hazardous Characteristics

- | | |
|---------------------------|-----------------------------------|
| 1. Physical State: _____ | 2. Ignitable: _____ |
| 3. Treatment Group: _____ | 4. Corrosive: _____ |
| 5. Reactive: _____ | 6. Toxicity Characteristic: _____ |

D. Chemical Composition

- | | | |
|---------------------------------|---------------------|-----------------------------|
| 1. Copper: _____ | 2. Nickel: _____ | 3. Zinc: _____ |
| 4. PCBs: _____ | 5. Phenolics: _____ | 6. Volatile Organics: _____ |
| 7. Chromium (Hexavalent): _____ | 8. Other: _____ | |

E. Material Composition

Components (Chemical Name and CAS #)	Range and/or Concentration (specify units)

BEF Representative Name/Grade

Signature

Date

Part 3, Environmental Management

A. Shipping Information

- | | |
|--|---|
| 1. DOT Hazardous Material: _____ | 2. Proper Shipping Name: _____ |
| 3. Hazard Class: _____ | 4. U.N. Number: _____ |
| 5. Additional Description: _____ | |
| 6. Mode of Shipment: _____ | |
| 7. Reportable Quantity: _____ | 8. Emergency Response Guide Page: _____ |
| 9. Special Handling Information: _____ | |
| 10. Waste Category: | |
| <input type="checkbox"/> Hazardous waste <input type="checkbox"/> Designated waste <input type="checkbox"/> Non-regulated waste <input type="checkbox"/> Used Oil Fuel | |

CEV Representative Name/Grade

Signature

Date

Figure 7-1. PACAF Waste Identification Form (Cont'd)

Part 1, Waste Stream Information

A. Generator Information

1. Hazardous Waste Accumulation Point Manager: Enter accumulation point manager's name.
2. Unit/Office Symbol: Enter the unit and office symbol of the hazardous waste accumulation point manager.
3. Telephone: Enter technical contact's telephone number.
4. Building Number: Enter the accumulation point building number.
5. HW Accumulation Point Number: Enter the assigned accumulation point number.
6. Waste Stream Name: Enter a name that is generally descriptive of this waste (e.g., paint sludge, solvent waste, absorbents contaminated with fuel, etc.). Refer to the shop hazardous waste stream inventory for existing waste stream names.
7. Waste Stream Number: Enter the waste stream number from the shop waste stream inventory (leave blank if new waste stream).
8. HWPS Number: Enter the Hazardous Waste Profile Sheet (HWPS) number from the HWPS (leave blank if new waste stream). NOTE: The HWPS number may be changed as a result of re-characterization.
9. Enter the reason for preparing/submitting the PACAF Waste Identification Form [Note – the PACAF form is usually prepared/submitted when one of the following occurs: a new waste stream is created, an existing waste stream is being recharacterized (typically annually or triennially), or an existing waste stream changes and/or the process generating the waste stream changes].

B. Process Information

1. Specific Process Generating the Waste: Describe the specific process/operation or source that generates the waste (e.g., paint spray booth, solvent cleaning tank, spill cleanup, etc.).
2. Materials Used in the Process: List the specific materials used in the process.
3. Estimated Amount Generated Annually: Enter the amount generated annually (include units).
4. Type and Size of Container Used to Collect Waste: Enter the container type and size.
5. Hazardous Waste Profile Sheet Characterization Date: Enter the date of the HWPS; leave blank if new waste stream. NOTE: This date will be changed as a result of recharacterization.
6. Hazardous Waste Profile Sheet Re-Characterization Due Date: Enter a date either one-year (for high volume waste streams) or three-years (for low volume waste streams) from the date of the HWPS. NOTE: This date will be changed as a result of recharacterization.
7. Applicable Sample Number(s) (attach results): Enter the most recent sample number from the HWPS (leave blank if new waste stream).

C. MSDS Information (attach appropriate MSDSs to this form)

1. National Stock Number (NSN): Enter the NSN of the material used (you may enter up to four different products on this form, add an additional sheet if necessary).
2. Company Name: Enter the manufacturer of the product you are using.
3. Part Number/Trade Name: Enter the part number or trade name of the product you are using.
4. Nomenclature: Enter the name of the product you are using as depicted on the MSDS.
5. MSDS Serial Number: Enter the MSDS serial number (MSDS supplied directly from the manufacturer may not have a serial number).

Figure 7-1. Instructions for Completing PACAF Waste Identification Form (Cont'd)

Part 2, Bioenvironmental Engineering

A. MATERIAL CHARACTERIZATION (OPTIONAL INFORMATION)

1. Color: Describe the color of the waste (e.g., blue, clear, varies).
2. Density: Indicate the density or density range in units of pounds per gallon [Note: Density equals specific gravity times 8.33]. The specific gravity of water is 1.0. Most organics are less than 1.0. Chlorinated solvents, most inorganics, and paint sludge are greater than 1.0.
3. BTU/LB: This heating value entry is only required for waste that may have potential for use as a fuel substitute.
4. Ash Content: This entry only used for used oil with energy recovery potential.
5. Total Solids: Content can be expressed as either weight percentage or dry weight concentration (mg/kg).
6. Layering: Enter the number of phases of the waste (single phase, biphasic, multiphasic).

B. REQUIRES ANALYSIS

Indicate if the waste requires analysis for proper characterization and add new sample number if a new sample was collected.

C. HAZARDOUS CHARACTERISTICS

1. Physical State: Enter solid, semi-solid, liquid, or gas as appropriate.
2. Ignitable: Indicate if the waste is ignitable (D001). If a liquid, also list the flashpoint (specify if flashpoint is in units of ° F or ° C). Solids with flammable potential (such as pyrophorics) should be identified in line 8 of Part D, "Chemical Composition." Enter "No" if the waste does not exhibit the characteristic of ignitability.
3. Treatment Group: Enter whether waste is a wastewater or a non-wastewater for treatment purposes (wastewater contains < 1% total organic carbon and < 1% total suspended solids by weight; non-waste water is everything else).
4. Corrosive: Indicate if the waste is corrosive (D002). If the waste is aqueous (i.e., contains at least 20% water by volume), also list the pH of the waste. If the waste is non-aqueous, indicate if this waste corrodes steel (KEGS Appendix B, Section B-1c). Enter "No" if the waste does not exhibit the characteristic of corrosivity.
5. Reactive: Indicate if the waste is reactive (D003), and if so, if it is water reactive, cyanide reactive, or sulfide reactive (KEGS, Appendix B, Section B-1d). Enter "No" if the waste does not exhibit the characteristic of reactivity.
6. Toxicity Characteristic: Indicate if the waste contains a toxicity characteristic contaminant which exceeds the regulatory level (KEGS, Appendix B, Table B-1 and B-2). If so, specify the hazardous waste number (e.g., D008 for lead, D035 for methyl ethyl ketone, etc.) for each exceeding contaminant. Enter "None" if the waste does not exceed any toxicity characteristic regulatory limits.

D. CHEMICAL COMPOSITION

Indicate if any of the listed chemical components (e.g., copper, nickel, phenolics, PCBs, etc.) are present in the waste and specify the concentration level. Be sure to include units (e.g., %, ppm, mg/L, mg/kg). Indications of other hazardous properties (e.g., explosive, pyrophoric, radioactive, etiological, peroxide forming, etc.) should be annotated in line 8.

Figure 7-1. Instructions for Completing PACAF Waste Identification Form (Cont'd)

E. MATERIAL COMPOSITION

List all organic and/or inorganic components of the waste using **specific chemical names**. If trade names are used, attach MSDS or other documentation which adequately describe the composition of the waste. For each component, list its Chemical Abstract Service (CAS) Number (if applicable) and estimate the range (in percent) or concentration (in mg/L, mg/kg, or ppm) in which the component is present. In case of extreme pH (≤ 2 or ≥ 12.5), indicate specific acid or caustic species present. This list must include any hazardous components which exceed 10,000 ppm (1%).

Part 3, Environmental Management

A. SHIPPING INFORMATION

1. DOT Hazardous Material: Indicate if this waste is regulated by U.S. Department of Transportation (DOT) (see 49 CFR §172.101).
2. Proper Shipping Name: Enter the proper US DOT shipping name for this waste. Use the most descriptive shipping name from 49 CFR §172.101.
3. Hazard Class: Enter the proper US DOT hazard class (see 49 CFR §172.101 for hazard class designations and Figure 5-5 of this guide for an illustration of DOT labels).
4. U.N. Number: Enter the proper US DOT identification number (see 49 CFR §172.101).
5. Additional Description: Enter any additional shipping information required, such as the applicable packaging group and label codes (49 CFR §172.101) and any applicable description required under 49 CFR §172.203.
6. Mode of Shipment: Indicate the applicable mode of shipment (e.g., bulk, drum, or other).
7. Reportable Quantity: Enter the Reportable Quantity for this waste the KEGS Appendix B, Table B-4.
8. Emergency Response Guide Page: Indicate the appropriate Guide Number found in DOT Publication 5800.4 (Emergency Response Guide). For example, waste acetone would be Guide Number 127.
10. Special Handling Information: Describe those hazards which you know or reasonably believe are or may be associated with short term or prolonged human exposure to this waste (29 CFR §1910.1200). If known, please identify any carcinogens present in this waste in excess of 0.1% (29 CFR §1910.1200(d)(4)). Attach relevant documents as a part of your response if appropriate. If documents are attached, identify those attachments. If you have a current MSDS, it may be attached. Also include any additional information that will aid in the management of the waste. Consult Bioenvironmental Engineering for assistance in completing the special handling information.
11. Check the appropriate box to indicate the waste category (hazardous waste, designated waste, non-regulated waste, or used oil fuel).

Note - The IHWPM should make any corrections necessary to the hazardous waste profile sheet number, hazardous waste profile sheet characterization date, and the hazardous waste profile sheet re-characterization due date under Part 1 of the PACAF Waste Identification Form. This may be accomplished by drawing a single line through the incorrect data, adding the correct data, and initialing the change(s).

Figure 7-1. Instructions for Completing PACAF Waste Identification Form (Cont'd)

**AFIOH/DOBP (STINFO)
2513 KENNEDY CIRCLE
BROOKS CITY-BASE TX 78235-5116**

OFFICIAL BUSINESS